

Small-scale mining and production networks in sub-Saharan Africa: Reconceptualising a framework for 'pro-poor' ethical mineral certification



James Thomas McQuilken

Thesis submitted for the Degree of Doctor of Philosophy

Surrey Business School

Faculty of Arts and Social Sciences

University of Surrey

April 2018

Declaration of originality

This thesis and the work to which it refers are the results of my own efforts. Any ideas, data, images or text resulting from the work of others (whether published or unpublished) are fully identified as such within the work and attributed to their originator in the text, bibliography or in footnotes. This thesis has not been submitted in whole or in part for any other academic degree or professional qualification. I agree that the University has the right to submit my work to the plagiarism detection service TurnitinUK for originality checks. Whether or not drafts have been so-assessed, the University reserves the right to require an electronic version of the final document (as submitted) for assessment as above.

Signed: 

Word count: 118,422

Preface

Work undertaken as part of this thesis has formed the basis of, and contributed towards, the following publications and conference presentations. Specific areas of the thesis where significant parts of text were used largely *verbatim* for these publications are also highlighted using footnotes within the main body of the text.

Refereed publications

McQuilken, J. and Hilson, G. (2018) 'Mapping' Small-Scale Mineral Production Networks: The Case of Alluvial Diamonds in Ghana.' *Development and Change*. Forthcoming, doi: <https://doi.org/10.1111/dech.12403>

Fritz, M., McQuilken, J., Collins, N., Weldegiorgis, F. (2018). *Global Trends in Artisanal and Small-Scale Mining (ASM): A review of key numbers and issues*. Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF). Winnipeg: IISD.

Hilson, G. and McQuilken, J. (2017) 'Moving overseas? Critical reflections on the implementation of Latin American ethical gold schemes in sub-Saharan Africa', in Deonandan, K., and Dougherty, M.L. (eds.), Chapter 10, *Mining in Latin America, Critical approaches to the new extraction*, London: EarthScan from Routledge.

Hilson, G., Hilson, A., Maconachie, R., McQuilken, J. and Goumandakoye, H. (2017) 'Artisanal and Small-Scale Mining (ASM) in Sub-Saharan Africa: Re-conceptualizing Formalization and 'Illegal' Activity', *Geoforum*, 83, pp. 80–90.

Hilson, G., Hilson, A. and McQuilken, J. (2016) 'Ethical Minerals Fairer Trade for Whom?', *Resources Policy*, 49, pp. 232–247.

McQuilken, J. (2016) ' 'Ethical gold' in sub-Saharan Africa: A viable empowerment strategy?', *International Development Planning Review*, 38(2), pp. 179–199.

McQuilken, J. and Hilson, G. (2016) *Towards Inclusive Formalisation of ASM in Ghana: Background Research for an Action Dialogue*. London: International Institute of Environment and Development.

Hilson, G. and McQuilken, J. (2014) 'Four decades of support for artisanal and small-scale mining in sub-Saharan Africa: A critical review', *The Extractive Industries and Society*, 1(1), pp. 104–118.

Conference presentations

McQuilken, J. (2017). *Mapping the Social Production Networks of Artisanal and Small-Scale Mining: The case of Ghana*. The Challenges of Global Resource Extraction, School of International Development, University of East Anglia, 12–14 September 2017.

McQuilken, J. (2017). *How can Ethical Mineral Certification Schemes for ASM support the Africa Mining Vision?* The Canadian Association for the Study of International Development (CASID) 2017 Panel 1.3.3 The African Mining Vision: Critical Reflections on an Agenda for Change, Toronto, May 2017.

McQuilken, J. (2016). *'Mapping' Small-Scale Mineral Production Networks: The case of alluvial diamonds in Ghana*. Workshop: Labour in ASM: Comparative and Interdisciplinary Perspectives, University of Antwerp, Belgium, 22–23 September 2016.

McQuilken, J. (2016). *Ethical Gold in sub-Saharan Africa: a viable empowerment strategy?* Workshop: Labour in ASM: Comparative and Interdisciplinary Perspectives, University of Antwerp, Belgium, 22–23 September 2016.

McQuilken, J. (2016). *'The walls are made of diamonds': Mapping the production networks of artisanal and small-scale mining*. Corporate Social Responsibility, Governance Frameworks, and Human Security: Examining Canada's Role in Africa's Natural Resource Sectors, Queens University, Kingston, Canada, 3–4 May 2016.

McQuilken, J. (2016) *Ethical Mineral Certification: Mapping the production networks of artisanal and small-scale mining*. BAM Marketing and Retail SIG Event Sustainability and Ethical Consumption. Surrey Business School, University of Surrey, 28 April 2016.

McQuilken, J. and Hilson, G., (2016). *Research Overview: Action Dialogue on ASM in Ghana*. International Institute of Environment and Development, Artisanal and small-scale gold mining in Ghana Workshop, Tarkwa, Ghana, 18–22 January 2016.

McQuilken, J. (2014). *'Ethical' Mineral Schemes and Poverty Alleviation: Critical Reflections of the Diamond Development Standards*. Political Ecology and Development: Resources, Power and Justice an International Conference, University of Lancaster, 9 September 2014.

McQuilken, J. (2014). *'Ethical Gold' in sub-Saharan Africa: A viable poverty alleviation strategy?* 3rd UMAT Intercontinental Mining and Mineral Conference, University of Mines and Technology, Tarkwa, Ghana, 31 July 2014.

McQuilken, J. (2014). *'Ethical Gold' in sub-Saharan Africa: A viable poverty alleviation strategy?* Paternalism to Corporate Social Responsibility (CSR): Mining, History and Heritage, Leiden University, The Netherlands, 8–9 May 2014.

McQuilken, J. (2013). *'Ethical Gold' in sub-Saharan Africa: A PechaKucha Presentation*. Using and Abusing the Impact Agenda. Economic and Social Research Council, South East Doctoral Training Centre Conference, University of Surrey, November 2013.

Awards

2016 Winner: Vice-Chancellor's Award for Postgraduate Research, University of Surrey.

Awarded Economic and Social Research Council (ESRC) grant for a two-day conference in June 2016: 'Harnessing the Extractive Industries for Development in sub-Saharan Africa' #EX4DEV16.

Abstract

In rural sub-Saharan Africa, tens of millions of people engage in artisanal and small-scale mining (ASM), low-tech, labour-intensive mineral extraction and processing. Working in precarious conditions, these – mostly-impooverished – operators are deeply embedded at the base of global networks of production that supply significant quantities of the world's minerals and construction materials, including upwards of 20 per cent of global gold and diamonds production each year. But constrained by mineral governance frameworks and an 'opportunity structure' that is found to prioritise the development of export-led large-scale mineral extraction and exploration activities, the vast majority of ASM operators find themselves entrenched in cycles of poverty that trap them in the informal economy. Here, their activities, while productive, have, due to a lack of regulation, become strongly associated with a range of deleterious social, health and environmental problems that have had detrimental impacts on rural communities. Significantly, these 'expressions' of the sector's informality have provided a source of inspiration for the pioneering designers of ethical mineral certification schemes, which variously claim to facilitate transformational change by empowering the most marginalised ASM operators. The results thus far, however, are unimpressive: despite the fanfare surrounding their implementation, they are rather commonly associated with elite capture, target the 'low hanging fruit', and have failed to reach – and at times, even attempt to target – the unlicensed miners that are entrenched in the shadow economy and who are in the greatest need of support. Further analysis reveals that the designers of ethical mineral schemes, and the NGOs, government bodies and industry organisations backing them, have a poor knowledge of the dynamics of the ASM sector, which has hampered their ability to pinpoint who, specifically, to target in the value chain and how to go about engaging them.

The purpose of this thesis, therefore, is to help bridge this gap by deepening understanding of the local level functioning of ASM activities, and the complex multi-layered networks of labour and production they are a part of, with a view toward facilitating the improved design of ethical mineral schemes and complementary support structures for the sector's operators. It is this crucial information and level of detail that is needed to put organisations in a position to entice impoverished ASM operators to vacate the informal sector 'spaces' which they populate, as well as design ethical mineral schemes which are truly 'pro-poor'. To achieve this, the thesis adapts the Global Production Network (GPN) framework, embracing heavily its core underpinning themes of *embeddedness*, *empowerment*, and *value*, which constitute the pillars of the theoretical and conceptual framework adopted in this thesis. These frameworks are used as a lens to 'map' the complex networks found in a diamond-producing section and gold-producing area of Ghana, the location of one of the more dynamic and sizeable ASM economies in sub-Saharan Africa.

The thesis found and reconceptualised ASM activities to be deeply embedded within *social production networks* characterised by trust-based, reciprocal relationships of mutual cooperation and benefit. These social production networks are shaped by long histories of interaction with 'lead firms' which continue to influence the contemporary functioning of ASM activities. The thesis also found that in the absence of

formal support services for the sector, the so-called ‘unscrupulous middlemen’ – which architects of ethical mineral schemes aim to remove from supply chains and around whom they have managed to drum up significant public support – do, in fact, provide invaluable services and are crucial to ASM’s functioning in informal ‘spaces’. With this information and a detailed understanding of the various roles within the networks of supply, the way in which minerals move upwards through key nodes, and how local-level activities interlock with international markets, a number of key recommendations and draft blueprints are developed.

The multiple and significant contributions to knowledge of this thesis are:

- 1) To the literature on informality and ASM with regard to unpacking the local level functioning of activities and especially the role of a range of actors often referred to collectively as ‘middlemen’.
- 2) The conceptual development of embeddedness, trust and reciprocity as lenses with which to conceptualise, help explain, and examine the workings of ASM production networks and with which to generate new insights.
- 3) The significant conceptual and theoretical advancement, and adaptation of, the Global Production Network framework in order to develop the novel Social Production Network as a tool to map and capture the fine details and dynamics, and improve understanding of, informal economic activities, and in particular, those found in artisanal and small-scale mining.
- 4) The development of two clear draft blueprints for action to help lead to effecting change in policy and practice and support broader formalisation efforts for the ASM sector. These are tailored to:
 - policymakers in Ghana to help with catalysing formalisation activities through middlemen and reaching informal and semi-formal ASM spaces, including a clear set of recommendations for key national stakeholders.
 - organisations looking to develop truly pro-poor ethical mineral certification initiatives, and adapt existing ones to reach informal ASM operators in Ghana, and similar geographies in sub-Saharan Africa.

Acknowledgements

First and foremost, this thesis is dedicated to my late father Jonathan McQuilken (30th September 1957 – 4th November 2016) who unexpectedly passed away after a 34-year long career as a highly accomplished petroleum systems geoscientist. It was his passion for the natural world and the great outdoors, taught and imparted on to me from a young age, as well as his unwavering support in many immeasurable ways throughout my life, that got me to this point and for me to be able to undertake a PhD in the first place. I hope I have done you proud. A second dedication also goes to my late Grandmother, Norma McQuilken (28th May 1925 – 3rd August 2017). Her wisdom, many stories of travelling the globe in her youth, as well as her continued encouragement to enjoy life and ‘do it while you’re young’, have and will continue to be a source of inspiration to living a life well lived for years to come.

Next, I would like to thank my family, close friends, and colleagues who have provided much needed encouragement, reassurance, inspiration and laughter, and who have shown great understanding, especially when I have been absent from numerous events over the years due to the need to ‘write my PhD’. A special thank you in this respect goes to my mother Catherine and step-father Keith for always lending an ear and providing me with the space and support in times of need, as well as my Mum’s expertise assisting with transcriptions and references, and for her critical eye of the text. A further special thank you goes to Giulia Salmaso who has ridden the PhD roller-coaster alongside me at every twist and turn, acting as a soundboard for ideas and frustrations, as well as sharing in the highs of the process too. *Grazie.*

I also owe a momentous debt of gratitude to my supervisor Professor Gavin Hilson who has been *the* driving force behind the thesis. He has provided me with direction and afforded opportunities that are not always given to PhD researchers such as the chance to present at international conferences, publish in high quality journals, and to collaborate on various projects. These experiences, and the networks of people he has introduced me to, have added immeasurably to the PhD and put me in good stead for my continued career. As well as Gavin, I would also like to thank Dr Abbigail Hilson, Eunice Adu-Darko and their wider family without whom it would not have been possible to complete the PhD and fieldwork; nor would it have been as much fun.

In this regard, another significant thank you goes to Stephen Okyere (Atta) and Emmanuel Essel (Ema) who became senior uncles to me as well as close friends during the year spent travelling Ghana in search of diamonds and gold, and listening to Ema’s eclectic 10-CD strong music collection. From country and western through to high-life, and including artists such as Lucky Dube, Hillsong, Daddy Lumba, Phil Collins and Craig David all of which are now etched in my mind forever. Thank you too, to all participants of the research and especially the communities for their time and ‘voice’, as well as the many contacts and friends made, and hospitality shown along the way. I would also like to take this opportunity to thank Ghana’s University of Mines and Technology staff, in particular Professor Richard Amankwah for his

assistance with fieldwork and helping to provide accommodation. A final acknowledgement goes to the UK Economic and Social Research Council for the 3-year PhD studentship provided to fund the research and financial support for the fieldwork. Needless to say, all opinions expressed and any errors contained within the thesis are solely that of the author.

Contents

List of tables	ix
List of figures	ix
Acronyms and abbreviations	x
Chapter 1 – Introduction	1
1.1 The ‘real-world’ context: From jewellery to electric vehicles	1
1.2 The research context	6
1.3 Research question, aims, objectives, synopsis, and recommendations	10
Chapter 2 – Literature Review	15
2.1 Introduction	15
2.2 Artisanal and Small-Scale Mining in Sub-Saharan Africa: The formalisation conundrum	18
2.2.1 Building a case for formalising ASM in Sub-Saharan Africa	18
2.2.2 Building a case for ethical mineral certification in sub-Saharan Africa	32
2.3 Conceptual framework and theoretical foundation: The Global Production Network	50
2.3.1 Introduction	50
2.3.2 A critical overview of GPN scholarship	52
2.3.3 Embeddedness	56
2.3.4 Empowerment (power)	62
2.3.5 Value	66
2.3.6 Summary	69
2.4 Introduction to the case study	71
2.4.1 Introduction to the Ghana Case	71
2.4.2 The policy context of ASM in Ghana	73
2.5 Conclusion	74
Chapter 3 – Methodology	76
3.1 Introduction	76
3.2 Philosophical framework: A worldview	78
3.2.1 Research ontology	78
3.2.2 Research epistemology	79
3.3 Research methodology	83
3.3.1 The case study	83
3.3.2 Research strategy	84
3.4 Research methods	91
3.4.1 Data collection	91
3.4.2 Data analysis: semi-structured interviews	95
3.5 Ethics, limitations and risks	96
3.5.2 Ethics and limitations	96
3.5.3 Risk	98
3.6 Conclusion	98
Chapter 4 – ‘Informalising’ Artisanal and Small-Scale Mining	101
4.1 Introduction	101
4.2 Mineral governance framework: ‘Creating’ informality	102
4.2.1 Empowering large-scale mining through regulation and policy	104
4.2.2 Disempowering small-scale miners through licensing	110
4.2.3 A poor understanding of the livelihoods dimension	117
4.2.4 Summary	132
4.3 Ethical mineral certification: a vehicle for facilitating formalisation?	133
4.4 Conclusion	140
Chapter 5 – Mapping informal artisanal and small-scale mineral production networks	141
5.1 Introduction	141
5.2 Global diamond and gold supply chains in context	142
5.2.1 Akwatia diamonds	142
5.2.2 Tarkwa gold	144
5.3 Network embeddedness	148

5.3.1 Embedding formal local production networks around 'lead firms'	148
5.3.2 Embedding informal, trust-based, social production networks.....	156
5.3.3 Summary	170
5.4 Empowerment (power) and value	172
5.4.1 Mapping mine site production and labour network activities.....	177
5.5 Conclusion	183
Chapter 6 – Critical reflections on providing 'transformational change' and 'empowerment'	185
6.1 Introduction.....	185
6.2 The importance of recognising <i>and</i> understanding the complexities	186
6.2.1 Providing graphical representations of the sector.....	186
6.2.2 Generating richer and more detailed theoretical insights.....	187
6.3 'Invaluable' middlemen	192
6.4 Creating, enhancing and capturing value	196
6.4.1 Understanding the functioning of local level diamond and gold markets	197
6.4.2 A draft blueprint for harnessing the power of the middlemen.....	198
6.4.3 Realising value in-country	200
6.5 Reaching the informal economy	204
6.5.1 Land and licensing.....	205
6.5.2 Decentralisation of governance and provision of support services	206
6.5.3 Empowerment of small-scale mining associations and improved dialogue.....	206
6.5.4 Can ethical mineral certification schemes deliver transformational change?	207
6.6 Conclusion	209
Chapter 7 – Conclusions	210
7.1 Situating the research.....	210
7.2 Key findings and contributions	212
7.2.1 The dynamics of informality.....	212
7.2.2 The Social Production Network framework – A new methodology?	214
7.2.3 Reconceptualising the role of middlemen	214
7.2.4 Developing a draft blueprint for pro-poor ethical mineral certification schemes	215
7.2.5 Working within the confines of the policy and government machinery	216
7.3 Recommendations	216
7.3.1 Ministry of Lands and Natural Resources.....	217
7.3.2 Minerals Commission.....	217
7.3.3 PMMC	218
7.3.4 Local government assemblies.....	218
7.3.5 GNASSM and informal small-scale miners.....	218
7.4 Critical reflections on positionality and limitations	219
7.4.1 Positionality	219
7.4.2 Limitations.....	221
7.5 Future work	222
7.6 Conclusion	224
Bibliography.....	225
Appendices	263
Appendix 1 Overview of ethical mineral certification schemes for artisanal and small-scale mining.....	263
1.1 Fairtrade Gold and Fairmined Gold	263
1.2 Maendeleo Diamond Standards™	264
Appendix 2 Semi-structured interview template.....	267
Appendix 3 Ethical review outcome	269
Appendix 4 Introductory letter	271
Appendix 5 Participant information sheet.....	272
Appendix 6 Risk register	275
Appendix 7 Field note diary entries	277
7.1 'Breaking day' at Tarkwa <i>galamsey</i> site.....	277

List of tables

Table 2.1 Selected definitions of ASM in sub-Saharan Africa	17
Table 2.2 Numbers of small-scale miners vs. human development and multidimensional poverty	20
Table 2.3 Human development indicators by region	26
Table 2.4 Select certification schemes for the minerals sector	37
Table 2.5 Aims, objectives and impact of flagship mineral certification schemes	39
Table 2.6 Details of selected certified mining cooperatives.....	40
Table 2.7 Forms of upgrading strategies in value chains.....	69
Table 3.1 Summary of research question, aim, and objectives.....	76
Table 3.2 Summary of the worldview, methodological approach and methods used in this thesis	77
Table 3.3 ASM research and publications from a range academic fields	82
Table 3.4 Ghana-based small-scale gold mining cooperatives working with Solidaridad	90
Table 3.5 Summary of semi-structured interviews undertaken.....	94
Table 3.6 Summary of research methods and data collection	100
Table 4.1 Africa Mining Vision Tentative Framework for Action on ASM	103
Table 4.2 Mineral governance framework for small-scale mining in Ghana	107
Table 4.3 National level stakeholder mapping	111
Table 4.4 'Flip-flopping' of ASM policy featured in national development plans	121
Table 4.5 Key small-scale mining policy initiatives in Ghana.....	123
Table 4.6 Examples of consistent 'taxation' message for the minerals sector in World Bank reports.....	125
Table 5.1 Largest gold refineries in the world by annual capacity	146
Table 5.2 Population of Tarkwa town and percentage employed in mining and quarrying	153
Table 5.3 Numbers of people employed at main large-scale gold mines in Tarkwa town	154
Table 5.4 Contribution of large-scale mines and small-scale miners to annual gold production	155
Table 5.5 Measures of Gold Fields embeddedness with local communities	159
Table 5.6 Local level actors in the Akwatia and Tarkwa diamond and gold production networks.....	171
Table 7.1 Summary of aim and objectives and where they are primarily addressed in the thesis	212

List of figures

Figure 2.1 The poverty trap in ASM.....	28
Figure 2.2 Organisation of the global fair trade network and Fairtrade International.....	34
Figure 2.3 Adapted framework for social production network analysis of ASM.....	70
Figure 3.1 Research strategy showing holistic and embedded case study approach.....	85
Figure 3.2 Map of Ghana showing location of case study sites.....	89
Figure 4.1 Large-scale mining concessions and Minerals Commission district centres.....	109
Figure 4.2 14-step process of obtaining a small-scale mining licence.....	113
Figure 4.3 Delivery of assistance to ASM in Ghana	120
Figure 5.1 Ghana interlocking with global diamond supply chain.....	144
Figure 5.2 Ghana interlocking with the global gold supply chain	147
Figure 5.3 Map of Denkyemboour District showing location of Akwatia.....	150
Figure 5.4 Annual gold production of Ghana 1800 to 2016.....	152
Figure 5.5 Map of Tarkwa-Nsuaem Municipality showing location of Tarkwa.....	153
Figure 5.6 Annual diamond production in Ghana 1920 to 2014	156
Figure 5.7 Example of Tarkwa gold supply chain from mine site to Accra	164
Figure 5.8 Akwatia node of the global diamond production network.....	179
Figure 5.9 Tarkwa node of the global gold production network	182
Figure 6.1 Value chain versus production network mapping: Theory and reality	191

Acronyms and abbreviations

ACP	Asia Caribbean Pacific
AEITI	Afghanistan Extractive Industries Transparency Initiative
AEZ	Artisanal Exploration Zones
AfDB	African Development Bank
AHCG	Australian High Commission in Ghana
AMP	African Mining Partnership
AMV	Africa Mining Vision
ARM	Alliance for Responsible Mining
ASM	Artisanal and Small-scale Mining
ASMO	Artisanal and Small-scale Mining Organisations
AU	African Union
AUC	African Union Commission
AURELSA	<i>Comunidad Aurifera Relave S.A.</i>
ATO	Alternate Trading Organisation
BGI	Better Gold Initiative
BGR	German Federal Institute for Geosciences and Natural Resources (<i>Bundesanstalt für Geowissenschaften und Rohstoffe</i>)
BJQ	Birmingham Jewellery Quarter
CAR	Central African Republic
CASM	Communities and Small-Scale Mining Initiative
CEDECOM	Central Regional Development Commission
CRAFT	Code of Risk-mitigation for Artisanal and small-scale mining engaging in Formal Trade
CTC	Certified Trading Chain
DDI	Diamond Development Initiative
DFID	UK Department for International Development
DPA	UK Data Protection Act
DRC	Democratic Republic of the Congo
ECOWAS	Economic Community of West African States
EITI	Extractives Industries Transparency Initiative
EPA	Environmental Protection Agency
EU	European Union
FDI	Foreign Direct Investment
FLO	Fairtrade International (formerly Fairtrade Labelling Organizations International)
FON	Friends of the Nation Ghana
GBP	British Pound
GCC	Global Commodity Chain
GCD	Ghana Consolidated Diamonds
GCDL	Great Consolidated Diamonds Ghana Ltd.
GDP	Gross Domestic Product
GHC	Ghanaian Cedi (old cedi)
GHS	Ghanaian Cedi (new cedi as of 2007; GHS 1 = GHC 10,000)
GNASSM	Ghana National Association of Small-Scale Miners
GNI	Gross National Income
GPN	Global Production Network
GPRS	Growth and Poverty Reduction Strategy
GPS	Global Positioning System
GSD	Geological Survey Department
GTZ	German Organisation for Technical Cooperation
GVC	Global Value Chain
HDI	Human Development Index
HIPC	Highly Indebted Poor Countries
HIV	Human Immunodeficiency Virus
ICGLR	International Conference on the Great Lakes Region
ICMM	International Council on Mining and Metals
IFI	International Finance Institutions
IGF	Internally Generated Fund

IIED	International Institute for Environment and Development
ILO	International Labour Organisation
IMF	International Monetary Fund
ITRI	International Tin Research Institute
ITSCI	ITRI Tin Supply Chain Initiative
KPCS	Kimberley Process Certification Scheme
LBMA	London Bullion Market Association
MDF	Mineral Development Fund
MDS	<i>Maendeleo</i> [Development] Diamond Standards™
MICODEPRO	Micodepro Development Group
MLME	Ministry of Lands, Mines and Energy
MLNR	Ministry of Lands and Natural Resources
MPI	Multidimensional Poverty Index
NGO	Non-governmental Organisation
NHS	National Health Service
OASL	Office of the Administrator of Stool Lands
OECD	Organisation for Economic Co-operation and Development
PMMC	Precious Minerals Marketing Corporation
PPP	Purchasing Power Parity
PRSP	Poverty Reduction Strategy Papers
RCM	Regional Certification Mechanism
RDF	Revenue Development Foundation
RJC	Responsible Jewellery Council
SAP	Structural Adjustment Programme
SBGA	Swiss Better Gold Association
SEC	Securities Exchange Commission
SECO	Swiss State Secretariat for Economic Affairs
SOTRAMI	<i>Sociedad de Trabajadores Mineros</i>
SSMP	Small Scale Mining Project
UK	United Kingdom
UMaT	University of Mines and Technology
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDESA	United Nations Department for Economic and Social Affairs
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
USD	United States Dollar
WFTO	World Fair Trade Organisation
WGC	World Gold Council

Chapter 1 – Introduction

1.1 The ‘real-world’ context: From jewellery to electric vehicles

On the 21st September 2017, the first ever shipment of African Fairtrade-certified gold left Uganda. Destined for the benches of a select-few artisan jewellers in the UK, this handful of gleaming metallic balls were to be forged into a small-number of unique pieces and jewellery lines set to go on sale in time for Christmas. Before reaching the workshops, however, these ‘symbolic grains’ were unveiled to a 100-strong audience of potential funders comprising donors, business owners and celebrity ambassadors at the *Fairtrade Gold: Future Innovations* conference. Here, delegates were ‘invited’ to become part of Fairtrade Foundation’s ‘ambitious new investment opportunity’ by pre-financing a fund to be used to ‘help small scale mine sites across East Africa access low interest loans to invest in the productivity of their operations and to accelerate their journey towards Fairtrade certification’ (Fairtrade Foundation, 2017a). The launch night was the culmination of almost a decade’s worth of work undertaken by the UK-based NGO to bring ethically and responsibly produced gold to market under its Fairtrade Gold labelling and certification scheme. Having previously worked (2009–2013) in partnership with the Colombia-based NGO-turned-industry organisation, Alliance for Responsible Mining (ARM), to develop the joint *Fairtrade and Fairmined Gold Standard* (FFGS), the ‘progress’ currently being made by the Fairtrade Foundation in Uganda is based heavily off the back of the experiences gained with its ex-partner in Latin America. Beginning in Bolivia, Colombia, and Peru, the two organisations set about establishing partnerships with a select-few, long-established, relatively-mechanised, and already-licensed small-scale gold mining cooperatives in the region (Maldar, 2011; McQuilken, 2016; Hilson and McQuilken, 2016). It remains unclear, however, how these experiences can be replicated in sub-Saharan Africa. Here, unlike sites being targeted in Latin America, the vast majority of artisanal and small-scale mining (ASM) operations are very different, predominantly low-tech, labour-intensive and comparatively rudimentary.

Championed by its proponents as ‘empowering responsible artisanal and small-scale miners’ (Maldar, 2011, p.1), the original Standard, and accompanying certification scheme, was designed to facilitate market access for boutique Western jewellery makers keen on securing a supply of artisanally-mined gold produced in a socially and environmentally sustainable manner. It would also have the added benefit of meeting the demands of a niche, albeit rapidly-expanding, market among largely middle-class, ethically conscious consumers located in Europe and North America, while at the same time, enabling artisanal and small-scale miners in faraway, rural locations to also gain routes to market. Certified miners would also receive ‘a fair price for their gold, with increased security [through] the Fairtrade premium’ (Maldar, 2011, p. 12). The premium is an additional payment made on top of the value of the shipment that goes toward financing community development projects. However, despite claims made on the original website that the FFGS ‘successfully brought about the empowerment of miner’s organisations, raised awareness of the issues in the ASM sector and provided businesses with the first traceable source of certified gold’ (Fairtrade and Fairmined Gold, 2014), in 2013, the partnership came to an end. This, as

McQuilken (2016) points out, was, in part, due to the issue of mass-balancing¹ as well as divergent views with the future vision of the schemes (Hilson and McQuilken, 2016).

Since going their separate ways, the two organisations (Fairtrade Foundation and ARM) have continued on their respective paths of trying to work with licensed small-scale miners and to certify precious metals under their, now independent, Fairtrade Gold, and Fairmined Gold certification labels. Having met the deliberately-stringent minimum standards of production and become certified, mining organisations – which must be organised into cooperatives referred to in the respective standard documentation as ‘artisanal and small-scale mining organisations (ASMOs)’ – receive a guaranteed minimum of at least 95 per cent market value for their gold. This is calculated according to the London Bullion Market Association (LBMA) twice-daily gold price fix. As intimated, certified mining cooperatives are also paid a ‘social premium’ for their gold which is used for community development projects. For Fairmined Gold, the social premium is set at USD 4,000 per kg. An additional USD 2,000 per kg is also payable (making USD 6,000 per kg in total) as an ‘ecological premium’ if the operations meet certain environmental criteria such as mercury-free production. The same is true for Fairtrade Gold, except that the additional ecological premium is calculated based on 15 per cent of the LBMA fix (Fairtrade International, 2013; ARM, 2014c).

But it is also the stringent prerequisites of the Standards which, to the credit of these certification organisations, are necessary to reassure consumers that the raw materials for their jewellery were produced without child labour, human rights abuses, and destructive social and environmental practices, have proved to be one of the major barriers preventing more small-scale miners from accessing and benefiting from the schemes. This is because the vast majority of miners operate informally. They work without a licence and the permits necessary by law, and which afford them protection under legal frameworks, through which they can become part of the formal economy, and from where they can become empowered agents of their own change and gain access to much-needed support services. These two schemes are also joined in the mineral certification space by a number of other allied traceability initiatives. Targeting mainly the large-scale mining industry, this broad group of schemes was conceived largely in response to so-called ‘conflict minerals’ but oftentimes include provisions for ASM. One example, which may be relatively well-known to the public *au fait* with the 2006 film *Blood Diamond* that stars frontman Leonardo DiCaprio as a diamond smuggler caught up in conflict-ridden Sierra Leone, is the Kimberley Process Certification Scheme. It was designed to track the movement of rough stones and ensure their origin is not associated with war or human rights abuses. Collectively, the documents and promotional materials made on behalf of these organisations spell out similar messages of good governance, transparency and traceability, and, specifically in the case of ARM and the Fairtrade

¹ As McQuilken (2016) explains, mass balancing in this context refers to the purchase of Fairtrade and Fairmined Gold (and full payment of all premiums) and the subsequent mixing or diluting with uncertified gold in order to increase the demand and guarantee a market for the former. While ARM was in favour in order to increase the demand for certified gold, a number of Fairtrade stakeholders opposed the move arguing that it undermined the ‘purity’ and image of the combined label in the ‘emerging ethical jewellery market’ (Choyt, 2013). Since this time, however, the Fairtrade Gold Standard now permits mass balancing provided that the final gold product is not labelled ‘Fairtrade in any consumer or public facing communication or marketing’ (Fairtrade International, 2013, p. 11).

Foundation, speak about working to develop ‘empowered responsible artisanal and small-scale mining organizations’ (ARM, 2017) while highlighting their ‘innovative work to help transform the lives of artisanal and small-scale miners across Africa by providing access to international markets and finance’ (Fairtrade Foundation, 2017b).

Yet, despite transparency and traceability, and relatedly, certification, being touted as *the* governance mechanism and *zeitgeist* to address mineral governance woes in sub-Saharan Africa and which will facilitate ‘transformative development impact’ (Alba, 2009; Sigam and Garcia, 2012; Buur et al., 2013; Ramdoo, 2013), as well as, in the case here, address the pressing development issues found in ASM, the *raison d’être* of ethical mineral schemes has received limited coverage in the academic literature to date. As will be discussed in this thesis, there is also even less critical reflection more widely, as to whether certification, in its current guise, is having or even capable of the type of ‘transformational change’ and ‘empowerment’ of small-scale mining communities that these organisations and their designers have led consumers and jewellers alike to believe. Mirroring the route taken of transparency and traceability in large-scale mining, as well as the approach over the past 60 years of organising farmers into cooperatives to deliver ethically produced bananas, tea, and coffee and other agricultural products for conscientious Western consumers, a number of scholars have raised concerns in the wider literature on Fair Trade as well as in regard to this latest foray into ASM. These include the propensity for elite capture; the targeting of ‘low hanging fruit’; traceability and transparency being treated synonymously with socio-economic development; and an inability to develop sustainable financing models to fund the daily activities of small-scale miners (Hilson, 2008; 2014; Childs, 2008; 2010; 2014; McQuilken, 2016; Hilson and McQuilken, 2016; Hilson et al., 2016; Fisher, 2018).

The need to establish a sustainable and buoyant market for ethical gold with which to support small-scale miners has become the main focus of both the Fairtrade Foundation and ARM in recent years. Their motivation for focusing on this is likely due to the belief that should they fail to deliver on this key requirement, then the communities that have come to rely on their support over the years would be faced with having to return back to dealing with ‘exploitative’ and so-called ‘unscrupulous’ middlemen. These are the narratives that characterise a whole swathe of local level ASM actors in erroneous, sweeping falsehoods which both organisations, through a lack of understanding of the local function and context of ASM, it is argued, have become accustomed to sharing. As will also be illustrated, these self-perpetuating stories are needed in order to garner support for their model of shortening and removing the supposed parasitic-type agents from ASM supply chains. It is against this background that the two organisations have therefore sought increasingly innovative, and in some cases seemingly desperate, measures to promote their programmes. To this end, since their ‘divorce’, ARM has focused on forming partnerships with glitzy, international award ceremonies, such as the *Cannes Film Festival*, where the prestigious *Palme D’Or*, awarded each year for best film, has, since 2014, been made using Fairmined certified gold. The organisation has also supplied certified product to forge the Nobel Peace Prize Medal and the Rio 2016 Olympic Laurel, as well as worked with luxury Swiss-watchmaker Chopard. Meanwhile, the ‘invitation’

extended by the Fairtrade Foundation to become involved in their new *Investment Facility* that was outlined at the start of this chapter, suggests that the NGO may be trying to pass-off some of its challenges regarding the need to finance small-scale miners as potential ‘opportunities’ for the global development community.

This, it is argued here, is being accomplished by packaging its shortcomings as a unique chance to provide ‘businesses and investors with a new route for supporting the accelerating [sic] of a responsible small-scale mining sector’, and by riding on the back of the growing interest in ASM, which they have commendably been a part of developing, among donors who are eager to spend their foreign-aid budgets. Indeed, the many socio-economic and environmental ‘ills’ of ASM that are conceptualised throughout this thesis as deep-rooted ‘expressions’ of the sector’s seemingly perpetual informality, have garnered increasing attention among international policymakers and media circles in recent years. While in the 1990s, this interest was largely in regard to so-called conflict diamonds purported to be fuelling civil war in places such as Sierra Leone and Liberia, the resurgence in the last decade has, in part, come off the back of a spiking of the world gold price which commenced in 2008. This led to a corresponding dramatic expansion of informal ASM activities across sub-Saharan Africa amid reports in the media of ‘blood gold’ (Fessy, 2010; Guéniat and White, 2015). Most recently, both the international development community and wider public have grown increasingly accustomed to hearing about how components and batteries of their smartphones, laptops, and electric vehicles, ownership of which is set to soar over the next few decades,² are intimately linked via direct supply chains to countries on the African sub-continent. The stories of the ASM activities found in nations such as the Democratic Republic of the Congo (DRC) and other countries in the African Great Lakes Region, are accompanied by powerful imagery of young men and often children who are driven, in large part, by poverty into the sector. In doing so, the public is told, they labour in precarious conditions to produce a substantive share of the world’s minerals and precious metals, such as coltan and cobalt so crucial to the manufacturing of the aforementioned electronics. Having been bombarded with these interlinked messages that offer a glimpse into the very complex activities, and socio-economic processes as well as the development challenges found in sub-Saharan Africa’s ASM sector, it is no wonder that donors are ready pickings for the likes of the Fairtrade Foundation and ARM for a potential partnership. However, while this may appear as the most well-trodden and therefore seemingly logical option, at the same time, doing so is likely to obscure and conceal other more sustainable and innovative avenues for partnerships. For example, these organisations could instead look to other legitimate and pre-existing market players, such as the so-called ‘unscrupulous’ middlemen as well as a host of other actors in the local and national networks of supply. Yet, knowledge of these potential avenues that could assist in taking their initiatives to the ‘next level’, while simultaneously helping to start to address many of the sector’s structural and deeply-embedded

² As well as the proliferation of personal electronic devices such as smartphones and laptops, the demand for electric vehicles is set to soar over the next few decades amid the announcements made in 2017 by many of the world’s major economies, including the UK, China and India, to ban the sale of all new petrol and diesel cars by the year 2040 (Gray, 2017).

development challenges, can only come with the time and energy taken to develop a fuller understanding of the ASM sector and its constituents that this thesis is set to help provide.

These concerns with regard to the need to expend a significant portion of time and energy in order to develop new markets, something which has taken over 60 years to engender in parallel schemes for agricultural products, and diverting much-needed attention away from better understanding the dynamics of the ASM sector, are deepened in light of the increasingly bizarre campaign efforts to increase and secure Western markets for ethical gold. The launch of the Fairtrade Foundation's 'I Do' campaign is a good illustration of this. Through a promotional video and accompanying press release the representatives call 'on couples across the UK who are getting married to choose Fairtrade Gold for their wedding rings' (Fairtrade Foundation, 2015a; 2015b). The two-minute film sees 15 people dressed head-to-toe in skin-tight, full-body, golden leotards during a cold November morning, and, standing upon the steps of London's St Paul's Cathedral, link hands to embody 'a human ring of gold' to symbolise 'all of the people in the gold supply chain'. While references to supply chains indicate some level of awareness and attempts to 'speak the language', the video also includes snippets from a Fairtrade Gold activist, and a jeweller who talk, consecutively, in reference to ASM of hearing 'lots of stories about people that are drowning in landslides and flooding' and the sadness of 'knowing something so beautiful and luxurious comes from torture and pain and misery'. Alarming, not only does the organisation appear to be drawing on its experience with generating markets for agricultural products by peddling stirring stories of vulnerability and exploitation, but as their other activities, as well as those of ARM, suggest, they may have become so preoccupied with them that they are being undertaken at the expense of others. The considerable time and resources needed to launch high-profile marketing campaigns and develop what have become very slick, and highly-professional, promotional materials, stories, and brochures, suggests that some of the officials at these organisations, and the UK-based activists and jewellers they have formed partnerships with, appear to have lost sight of what it is they are actually trying to achieve. Crucially, as the discussions over the course of this thesis also attest to, they also appear to be relatively unaware as to where their standards could have the greatest development impact for the ASM sector.

This is doubly worrying, as both organisations have recently begun expanding their work into parts of sub-Saharan Africa over the past five years. Their latest foray is into a region where the activities of ASM operators have been shown in the literature through a range of case studies over the years to be very different from their largely formalised and mechanised counterparts in Latin America. Furthermore, it is this experience that has been the bedrock which they have used to inform the design of the original, and relatively unchanged, standard which is now being implemented separately in sub-Saharan Africa. The focus of activities to date have been confined largely to parts of East, and West Francophone, Africa. Here, the Fairtrade Foundation is working with licensed communities in various parts of Kenya, Uganda, and Tanzania through funding support from the UK charity, Comic Relief. It has also undertaken outreach activities in partnership with another NGO active in the certification space, Solidaridad, in places such as Ghana, the case study country explored in this thesis, and as part of their original joint efforts with ARM

to help communities reach minimum requirements needed to *begin to apply* for certification. Meanwhile, ARM has been engaging in outreach activities and sensitising ASM communities to its Fairmined Gold alongside local partners in places such as Burkina Faso, Mali, and Senegal (Table 2.5). Their efforts in the region have therefore certainly taken off quickly.

On the one hand, this rapid proliferation is impressive. This is especially true given the challenges of working within the often constraining political and governance dynamics, that this thesis helps to clearly map and illustrate, and which typify complex informal sectors such as ASM in sub-Saharan Africa. However, as intimated, on the other hand, to date, both the Fairtrade Foundation and ARM have solely worked with *licensed* operators in both regions of the world where their certification schemes are undertaken. As a result, while they may have become (relatively) familiar and comfortable working in these legal, albeit, still challenging ‘spaces’, there are concerns that the respective organisations may have heavily underestimated the task at hand, and be woefully unprepared should they wish to seek to support the even-more marginalised *unlicensed* operators and break away from the criticisms being levied such as elite capture, and propensity to target the low-hanging fruit. Furthermore, insofar as neither of the organisations has made any apparent concerted effort in this regard, as the discussions over the course of the thesis show, they may also have missed a significant opportunity to have a more fundamental development impact. Specifically, by using their standards to try and reach out to the informal ‘spaces’ where over 70 per cent of small-scale miners are embedded in the shadow economy. In doing so, the organisations could begin to move closer to their aims of effecting *real* transformational change and the *true* empowerment of ‘responsible’ ASM communities, while, at the same time, begin to help to try and address the sheer depth and breadth of informality that has become a feature of many ASM operations in sub-Saharan Africa. If provided with the correct guidance and blueprint with which to do so, engaging with the informal ASM sector through certification in this way, could also prove invaluable for helping host governments get to grips with the challenges and *processes* of formalisation in their jurisdictions, which, as is shown, many have so far yet to fully recognise and understand. This would also help to start to provide much-needed support to both impoverished formal and informal ASM operators alike in countries across sub-Saharan Africa.

1.2 The research context: The need for greater detail of small-scale mining activities to inform *pro-poor* certification and formalisation initiatives

Over the past 20 years, a detailed and comprehensive body of literature has emerged which draws attention to the breadth and dimensions of this informality as well the significance of the ASM sector to the creation of wealth and job opportunities. This is especially true in light of the trend of *de-agrarianisation* across the region in the wake of neoliberal forms in the 1980s that rolled back state support in a number of sectors, retrenching thousands of people essentially overnight and making farm-based livelihoods largely untenable – leaving people to seek economic refuge in the ASM sector. The many in-depth case studies of these dynamics illustrate very clearly that throughout sub-Saharan Africa, ASM now provides employment opportunities for a wide range, and upwards of, 20 million people who are

both ‘pushed’ and ‘pulled’ into the sector by an equally wide-ranging spectrum of poverty related drivers. It also demonstrates the extreme heterogeneity found within and between mine sites, as well as the vast national, regional, and global differences in ASM operations revealing the highly context-specific nature and complexity of the sector. These are also features that policymakers have struggled to come to grips with, and are in urgent need of a greater understanding and knowledge of, so that this detail may be incorporated into legislation and governance frameworks to help support formalisation efforts – something which scholars have repeatedly called for over four decades of the ASM literature (Hilson and McQuilken, 2014).

It is against this background that Chapter 2 begins by examining this ‘formalisation conundrum’ that has stumped policymakers for years. It does this by critically examining the reason why formalisation should be a focus of attention as a priority, and what sorts of related activities are needed. In this way, it synthesises the ASM literature in order to build an argument around three pillars that are a regular feature in discussions. These are: 1) its significant positive contributions to job creation, ability to catalyse a host of ancillary activities in rural landscapes, account for a significant share of production of the world’s precious minerals and metals, and its contribution to national budgets in terms of revenue for host governments; 2) its impoverished state and how this has been a product of a failure to recognise its largely poverty-driven nature and provide it with the adequate attention and support it deserves, and; 3) how, the regulatory and licensing regimes that have been implemented in the region are inappropriate and exclusionary, further distancing small-scale operators from the legal space. Through this critical review, it is argued that the reason *why* formalisation and regulatory efforts have largely failed, is because while ASM has been *legalised* it has been side-lined in a policy space that favours large-scale mining; the subject of disjointed policy; and governed by inappropriate legal frameworks which are disconnected from the realities of impoverished communities on the ground. As a result, the end of Section 2.2.3 argues that policymakers have in effect *created* the conditions for illegality and informality to grow and persist. In order to overcome the ‘formalisation conundrum’ it is argued that a first step is to better understand the sector’s dynamics at the local level. It also outlines *the* consistent argument made in this thesis which is that in order to address the expressions of informality, a robust and bottom-up approach to regulation is needed to, first and foremost, bring the majority of operators into the legal domain from where the developmental challenges can be addressed, and the economic benefits of the sector harnessed as part of a holistic formalisation process.

Next, the case is made for the need for more innovative formalisation and support initiatives for the sector given the litany of past international efforts which have largely failed due to a focus on technical interventions and a downplaying of the social elements of ASM. In this way, Section 2.2.4 considers the potential of ethical mineral certification schemes, and, as outlined at the start of this chapter, charts their origins and ‘draws a box’ around the vast number of transparency and traceability schemes that have arisen in the minerals space in recent years due to, as outlined, the notion in many policymaking circles that these factors automatically equal and lead to socio-economic development. Three different

categories of certification initiatives based on their aims, objectives, and approach are identified, including the category of 'ethical mineral certification schemes' which include both the Fairtrade Foundation's and ARM's efforts due to their sole focus of working with artisanal and small-scale mining. In line with the arguments made at the start of this introductory chapter, the critical review identifies that in order for ethical mineral schemes to truly deliver on their objectives, their implementation bodies need to connect with the informal 'spaces', and, crucially similar to policymakers and governments officials seeking to formalise the sector, must commit to understanding the nuances of the complex informal 'spaces' where operators are found. Once again, the crux of the argument is that more information and detail is needed with which to inform interventions that are better connected to the 'realities'.

With this research agenda in mind, the next logical step was to consider the ways in which more detail could be captured regarding the functioning of activities, especially at the local level, and the wide-variety and multiple roles that the various actors are found to play, as the case studies in the literature revealed. Through a closer review of some of the certification organisation's documentation, key policy documents and macro-economic analysis for the sub-Saharan Africa region, as well as a handful of reports on ASM, a clear lexicon began to emerge around linkages, chains, and flows. Traditionally used by firms looking to enhance their competitive advantage (Porter, 1985), somewhat bizarrely it was found that these concepts were being applied in discrete parts of the ASM literature, largely in reports funded by donors, to use as units of analyses and with which to 'map' ASM supply chains. Key chain concepts (in chronological order) include the French *filière* approach (Raikes et al., 2000) value chains (Porter, 1985), global value chains / global commodity chains (Gereffi, 1994; Gibbon and Ponte, 2005). Yet while these analytical lenses, diagrams and analyses when applied to ASM clearly show the functioning and movement of value (Mutemeri and Samba, 2010; Da Silva-Glasgow, 2013; Human Rights Watch, 2015), they remove much of the social data, detail, and information that, as outlined, is considered necessary for developing pro-poor certification and formalisation initiatives. It was through this review of the broad 'commodity studies literature' that is described by some as having 'no common purpose, object of analysis, theoretical framework or methodological approach' (Bernstein and Campling, 2006a, p.240), that this work highlighted the Global Production Network (GPN) as a potential lens with which to reveal the complex functioning of ASM supply chains and much needed detail to inform pro-poor certification and formalisation strategies. Although not applied in the context of ASM, nor having been used as a lens to map the informal sector in general, the GPN offers a promising first step towards doing this. Developed as a conceptual framework to map and analyse the interconnections of production and consumption processes as they relate to economic globalisation (Henderson et al., 2002), the framework outlines three analytical categories of *embeddedness*, *power* and *value* with which to map production networks that are seen to revolve around 'lead firms'. By definition a global production network is a complex: 'organisational arrangement comprising interconnected economic and noneconomic actors coordinated by a global lead firm and producing goods or services across multiple geographic locations for worldwide markets' (Yeung and Coe, 2014, p.4).

Section 2.3 of Chapter 2 therefore begins with a review of the existing GPN-related literature, before turning to explore each of the analytical categories in turn and adapting and theoretically advancing them for use in this thesis. The second half of Chapter 2 (Section 2.3) therefore embarks on the process of adapting the framework for use to map the uniqueness and complexities of ASM. It does this by incorporating a fuller theoretical conceptualisation of its three key analytical categories in order to enable it to be used to capture details of the local level, informal socio-economic ASM activity which is re-conceptualised through the proceeding analyses as being comprised of *social production networks*. This is the theoretical and conceptual framework of the thesis, which is applied in Chapters 4 and 5 in order to address the overarching research question. Considerable time was taken to attempt to overcome Bernstein and Campling's (2006a, 2006b) criticisms outlined above, and ground the GPN framework in theoretical constructs such as trust, reciprocity, mutual cooperation, empowerment, agency, and forms of social upgrading which cut across the social science disciplines and are also well-articulated in much of the Development Studies and Business and Management literature.

Having developed an adapted framework for analysis, the remainder of Chapter 2 introduces the case study context of Ghana to examine the potential of using the GPN to map the ASM activities in the country. It is proposed that, through mapping two strands of local gold and diamond production in rural Ghana, the thesis will provide a broader conceptualisation of the complexities and relationships forged between the key actors who populate ASM networks. This information, it is argued, is needed to inform the design of formalisation and certification initiatives that are better connected to the realities and informal spaces on the ground. Next, Chapter 3 outlines the philosophical framework or 'worldview' of this thesis. In keeping with the aim of GPN research to improve the 'human condition', it places an emphasis on a pragmatic approach. To summarise, the research holds an ontology of relativism and the related epistemologies of subjectivism and constructivism: there are multiple socially-constructed realities, and knowledge is co-constructed through interpersonal interactions and shaped by contexts, thoughts, and perceptions. As such a pluralist approach combining the anti-positivist 'worldviews' of social constructionism, pragmatism and transformative change is taken. The methodology (research strategy) combines the GPN framework and a case study approach in order to build a rich picture of ASM activities. It has been designed to capture qualitative data through semi-structured interviews, complemented with field notes, and to move abductively backwards and forwards between theory, policy, and the lived experiences of impoverished ASM workers. This approach, it is argued, enables a more detailed understanding of the complex realities of ASM communities, from which to develop policy recommendations to refine mineral certification schemes and formalisation strategies so that they better reflect reality.

1.3 Research question, aims, objectives, synopsis, and recommendations

Chapters 4, 5 and 6, of this thesis therefore mobilise the adapted Global Production Network to map the complexities of informal ASM activities. They seek to develop richer insights into the inner workings of rural ASM communities, understand how they are connected to and interlock with exporting and international markets, and identify what entry points exist to improve development outcomes. It is this crucial information which NGOs, donors and government officials lack but will require if they are to design more effective ethical mineral certification schemes, policies, support services and formalisation strategies for the ASM sector.

The purpose of this thesis is to help bridge this gap by providing a broader conceptualisation of the complexities of ASM, and relationships forged between the key actors who populate its networks, through an adapted GPN framework. Specifically, the thesis addresses one overarching research question, the wording of which has been carefully chosen in order to place an emphasis on the claims made by the designers of ethical mineral certification schemes that they *empower* ASM operators. These terms also fit with the GPN's original stated aim of improving the 'human condition' and the analytical category of power that was advanced in this thesis to incorporate notions of agency and empowerment. This thesis, therefore, is guided by the following question: Can ethical mineral certification initiatives and formalisation strategies provide genuine transformational change for artisanal and small-scale miners in sub-Saharan Africa?

Tying the research in with gaps in knowledge and recognising the need for more detailed information to help certification and formalisation initiatives, the aim of the research is to broaden understanding of the demographics of ASM groups operating in rural sub-Saharan Africa, and the dynamics of their operations and the intricacies of the local production networks they are a part of in order to provide perspective on and policy recommendations for designing and implementing ethical mineral certification initiatives and formalisation strategies that are more in-tune with the realities of ASM. It is against this background that this thesis uses an embedded case study approach with which to map two strands of the GPN for diamonds and gold in Ghana and with this detail inform the design of more pro-poor certification and formalisation initiatives. The specific objectives are as follows:

- 1) To critically reflect on why formalisation has proved so elusive by mapping and examining the overarching international and national mineral governance frameworks operating in sub-Saharan Africa, and specifically Ghana, as well as the activities of ethical mineral certification initiatives in the country.
- 2) To improve understanding of the dynamics of local ASM production networks, operators, and their experiences in informal 'spaces' by applying the adapted GPN framework to map and analyse the social networks of artisanal and small-scale gold and diamond production in Ghana.

- 3) To explore the potential of, and critically reflect on the utility of the adapted GPN framework for generating new insights and knowledge by applying it to map local ASM production networks.
- 4) To provide specific and generalisable policy recommendations for improving formalisation strategies and ethical mineral certification initiatives in Ghana, as well as the wider sub-Saharan Africa region, that are more in tune with the realities of ASM on the ground.

The findings of the research are then presented, discussed, and critically examined over the course of Chapters 4, 5 and 6, broadly following the structure of the objectives. First, Chapter 4 builds on some of the key concerns raised in Chapter 2 regarding wider mineral governance frameworks and the policy environment more generally in sub-Saharan Africa. It accomplishes this through a focus on the political economy of the region and by mapping the regulatory structures, institutions, and key stakeholders governing ASM, with special emphasis on Ghana, the case study examined here. Drawing on analysis of key policy documents as well as feedback from in-depth interviews conducted with officials from a range of organisations and regulatory authorities, as well as selected small-scale miners, it reflects on why formalisation (of ASM) has proved to be so elusive in Ghana and sub-Saharan Africa more generally, and investigates how the policy environment continues to ‘create’ conditions which fuel the sector’s informality. In doing so, Chapter 4 highlighted three significant ways in which the overarching opportunity structure and policy initiatives put in place for ASM have acted to further ‘informalise’ activities. The interlinked issues of unavailability of mineralised land, an inaccessible licensing process, and a lack of recognition of the livelihoods dimension that underpins the sector, brought about by an overarching large-scale mining bias in policy and practice, has given rise to this. In turn, this bias is found to have promoted foreign direct investment at the expense of developing the indigenous ASM sector; erroneously casting small-scale operators in an entrepreneurial light which has resulted in the design of a licensing process that is inaccessible to disempowered miners; and validated the extraction of resource rents as the primary means of harnessing the sector for development. Compounded by a significant disconnect between national policymakers and local level officials working alongside ASM communities, together, these interrelated macro-level issues in the political economy help explain why formalisation of the sector has proved to be so elusive in the region, and Ghana more specifically (Objective 1). This analysis therefore provides perspective on the significant challenge that champions of ethical mineral certification schemes must embrace if genuinely committed to effecting the transformational change they claim to be committed to making to the lives of ASM operators.

The final part of Chapter 4, Section 4.3, is a critical analysis of the certification-related activities being undertaken in Ghana is presented (Objective 1). In relation to the overarching mineral governance frameworks examined, it helps to understand and reflect on the extent to which they are able to connect with informal miners identified as being in most need of support. It found that, to date, much of the activity being undertaken by the NGO Solidaridad in Ghana was focused on supporting a handful of already licensed and advanced small-scale miners. It also highlighted that due to a lack of understanding of local ASM activities a number of its interventions had provided inappropriate equipment, and due to

seasonal labour dynamics, and organisational and payment structures at sites that differ greatly to what is required in the Fairtrade and Fairmined standards, that their work had failed to yield much improvement. Linking to the themes outlined in the literature review, Chapter 4 reaffirmed once again that for ethical mineral schemes to truly deliver on their objectives and to empower the ASM operators in the greatest need of assistance, designers and implementation bodies must connect with the informal 'spaces' where these individuals are found. They must commit to understanding the nuances of these complex 'spaces' with a view toward gathering the information needed to establish a platform for formalisation and ultimately, to launch effective pro-poor ethical mineral certification schemes.

Next, the thesis moves on to act on one of its core contributions to knowledge: by mobilising the adapted GPN framework to map and to understand the local dynamics of the sector's informality. The result is very interesting, and shows the potential to generate very rich insights. Building on the macro-level mapping of the overarching mineral governance framework presented in Chapter 4, the chapter focuses on the community, micro-level processes and functioning of ASM activities. Drawing on a wide range of historical data, it begins by placing the case study locations of Akwatia and Tarkwa in the context of their respective production networks, and outlines the importance of the ASM activities in both places as key nodes of socio-economic activity embedded at the base the global supply of minerals. Through the mapping of key nodes of international markets for gold and diamonds, the chapter illustrates just how connected ASM communities in Akwatia and Tarkwa, as elsewhere in sub-Saharan Africa, are intimately linked to, and interlock with, the vagaries of the global economic system and supply of minerals. Through an integrated side-by-side analysis around the core analytical themes of the GPN, it shows the extreme diversity and heterogeneity both within the ASM sites under investigation as well as between them. It also shows the importance of understanding how past socio-political events have influenced contemporary mineral governance and network structures, and the associated influence of 'lead firms' – different to traditional GPN analyses, which cast the firm as central players. In the cases of Akwatia and Tarkwa, it was the failure and mechanisation of lead firms in these locations that have embedded semi-formal nodes of production. Furthermore, the analyses eloquently demonstrate how the constraining mineral governance framework, opportunity structure, and lack of state support that has materialised for the sector over the years and as is mapped in Chapter 4, has led to the growth of the sector's informality and meant ASM agents in both locales have had to look elsewhere for much needed support. The legalist argument also ran through, as it was shown that by moving to provide buyers with licences in both Akwatia and Tarkwa the government had, inadvertently, yet successfully, created semi-formalised nodes of socio-economic activity. Crucially, and another key contribution to knowledge, by building on the mapping of the overarching mineral governance framework in Chapter 4, the chapter also represents the first attempt to apply the GPN framework, which, to date, has been used rather conservatively to map industries for which an abundance of information already exists, to conceptualise the complexities of ASM. This, again, is needed in order to gather vital information about the sector, and to develop a more nuanced understanding of the interconnectedness of its key constituents.

Having very clearly shown that once adapted and theoretically advanced for the purpose of mapping informal socio-economic activities such as ASM, the GPN can provide very rich insights with which to inform evidence-based policymaking, and pro-poor formalisation and certification schemes that are better connected with informal spaces and the realities of ASM on the ground, Chapter 6 sets about examining these findings in greater detail and exploring what they mean for developing pro-poor ASM formalisation and ethical mineral certification schemes. It is in this part of the thesis in Chapter 6 that the real power of the adapted GPN framework becomes clear. The Chapter begins by reflecting on the utility of the framework itself, and through a comparison with another study undertaken in Ghana that used the value chain approach, illustrates how very different analytical findings and recommendations for action can be developed. This leads to the next significant contribution to knowledge that is outlined in Section 6.3. Here, the thesis sets out to reconceptualise middlemen as invaluable agents of change, and shows that if time is taken to properly understand their role, it is possible to identify avenues for intervention. Through this new knowledge and an understanding of the markets and how small-scale mining activities interlock, the first draft blueprint for harnessing the power of middlemen is suggested. It outlines how by taxing the network at the top (i.e. the large gold and diamond buyers in Accra) while, at the same time, undertaking a light-touch licensing approach at the bottom to help encourage transition to the formal sphere and offer support services, the Government of Ghana could help catalyse the formalisation of the network at the lower local levels. Next, a range of measures are outlined by which certification initiatives could make their interventions more pro-poor, as well as concrete measures on how to reach the informal economy. Finally, Chapter 6 briefly reflects on the latest development in the ethical mineral space, which is the introduction of a new code designed to help small-scale miners to access markets.

Chapter 7 brings the thesis to a close. It outlines the multitude of key findings and contributions which revolve around improving understanding of the dynamics of informality, as well as the potential development of a 'new' methodology being referred to here as the Social Production Network. Key limitations and positionality are also reflected upon, and more specific recommendations are made with regard to key national stakeholders in Ghana. The avenues for future work, of which there are many, are also outlined. Among the top priorities is the refinement of the Social Production Network and to the search for funding with which to do so, and in the process, generate a handbook or toolkit aimed at practitioners to be able to undertake rapid, yet comprehensive assessments of ASM communities that go far beyond linear value chain analyses. Here, the blueprint for certification initiatives is reproduced so that it may be easily accessible in the thesis and also be kept in mind when reading:

- 1) Recognise that there are gaps in understanding of the functioning of ASM in sub-Saharan Africa, and that the sector's activities are characterised by a high degree of heterogeneity that differ at local, national, regional, and global scales.
- 2) Recognise that there may be a need, and willingness, to alter current models to fit the local contexts they seek to target.

- 3) Seek to better understand the reality of mining communities on the ground and specifically that of informal operators who are most in need of support.
- 4) Review the findings and recommendations made in this thesis, seek the advice of academic experts, and commission additional research to better understand the national and local gold, diamond, and jewellery markets, the role of middlemen, and the political economy of the countries in sub-Saharan Africa within which they seek to establish certification schemes.
- 5) Based on the findings from the exercise in point 4, consider how to develop value adding and social upgrading activities in partner countries, partnerships with local businesses and key government agencies, and reach informal small-scale miners and communities either directly or indirectly.
- 6) Consider other actors and entry points in ASM networks, such as middlemen, to work alongside in order to support and begin to reach informal small-scale miners.
- 7) Work progressively towards developing African markets for certified jewellery and helping to keep more value in host countries.

The next chapter, Chapter 2, presents the literature review for this thesis. From this analysis, the conceptual and theoretical frameworks for the research are developed.

Chapter 2 – Literature Review

2.1 Introduction

This chapter brings together relevant strands of literature to frame the study of ethical mineral certification and its potential for the formalisation of the artisanal and small-scale mining sector in sub-Saharan Africa that is explored in this thesis. It marks the first time that many of these areas of the literature have been brought together in order to build a richer theoretical and conceptual framework developed from the Global Production Network (GPN) that draws on development studies, business and management, economic geography, political economy, certification, and the wide body of literature examining ASM and the extractive industries more widely.

It begins with an overview of the burgeoning body of ASM literature that has emerged over the past four decades, highlighting the importance of the sector both globally and in sub-Saharan Africa. It also outlines the defining characteristics of ASM and draws attention to one of the greatest challenges that continues to face policymakers, governments, and the wider community of development practitioners: the sector's widespread and pervasive informality. As has been witnessed repeatedly across sub-Saharan Africa over the past four decades, informal ASM comprises activities which are highly diverse and dynamic and characterised by a wide range of damaging social and environmental impacts that have trapped tens of millions of people in poverty, working in dangerous and deleterious conditions in their daily struggles to secure a wage. Yet, it also represents a vital lifeline to impoverished rural communities, contributes considerably to job creation and the national economies in developing regions where activities are commonplace, and comprise a significant proportion of the world's supply of precious metals and minerals through complex and largely hidden networks of production.

Next, Section 2.2.2 moves on to critically examine the wide range of mineral certification initiatives that have risen to prominence over the last decade. It focuses on three schemes that purport to solely target ASM operators and support the formalisation of the sector and help miners to move out of poverty by ensuring minimum standards of production and connecting them directly to Western consumers through traceable and transparent supply chains. These are: 1) The Alliance for Responsible Mining's (ARM) *Fairmined Standard for Gold from Artisanal and Small-Scale Mining, including Associated precious Metals* (Fairmined Standard); 2) Fairtrade Internationals' (FLO) *Fairtrade Standard for Gold and Associated Precious Metals for Artisanal and Small-Scale Mining* (Fairtrade Standard); and 3) the Diamond Development Initiative's (DDI's) *Maendeleo [Development] Diamond Standards™* (MDS). Drawing on the conceptual origins and wider fair trade literature, the review explores their potential for harnessing the ASM sector for social and economic development and examines progress made to date. It then goes on to highlight concerns with elite capture, misunderstanding of the functioning of the sector in sub-Saharan Africa and misdiagnoses of the important role that middlemen play – gaps in the knowledge that this thesis is poised to address.

Following on, Section 2.3 introduces the GPN framework as a lens with which to collect more detailed information regarding the functioning of local ASM activities, which, it is argued, is needed to inform the design of more effective ethical mineral certification schemes and formalisation initiatives that are better connected to the realities on the ground. Taking a highly interdisciplinary perspective the section weaves together theoretical contributions from a range of disciplines to provide a fuller theoretical conceptualisation of the three analytical categories – embeddedness, empowerment (power), and value – used in the original GPN framework and thereby enriching, and adapting it for use in examining informal ASM activities. The discussion moves away from the macro, firm level analyses most associated with the original GPN framework by advancing and incorporating notions of trust, reciprocity, empowerment, and upgrading, and taking a social networks perspective. In this way, artisanal and small-scale miners are conceptualised as agents that are embedded within interpersonal, multiscale, and multidirectional lattices of *social production networks* and wider mineral governance and institutional frameworks. Combined, this reconceptualisation comprises the conceptual and theoretical framework of the thesis. It also marks a significant methodological contribution: the first time the GPN framework has been applied to examine the largely informal ASM sector, and one of the first studies to take a fully networked perspective of ASM activities as opposed to linear value chain analyses that have come before.

With the contributions to knowledge and significance of the research demonstrated implicitly throughout the literature review, the penultimate section (Section 2.4) brings these multiple contributions together by introducing the case study of Ghana, situating the research agenda within wider policy frameworks and outlining the overarching research question, aim, and objectives of the thesis. It demonstrates the importance of ASM in the country and the necessity for more detailed information on ASM activities to help inform ongoing debates and assist with evidence-based policy making that recognises and attempts to harness the positive attributes of the sector rather than criminalise its largely impoverished inhabitants. Ghana's role in the region as a policy trailblazer and influencer in the mining sector is also recognised as being important to future scale up, transfer, and analytical generalisability of the lessons learned and findings from the research to other countries and parts of the sub-Saharan Africa region. Finally, the conclusion in Section 2.5 brings together the key findings of the literature review, summarising the links throughout the reviewed literature and theoretical framework and the connections to the following Chapter 3, which outlines the 'worldview' of the thesis and methods used.

Before proceeding, it is first instructive to offer some clarity on the definition of 'artisanal mining' and/or 'small-scale mining', given its noticeable absence from the business and management literature thus far and the extreme heterogeneity of activities. The origin of these terms and indeed the collective umbrella concept of 'ASM' has long intrigued development scholars. The term 'small-scale mining' first entered the development lexicon in 1972, following publication of the UN's landmark report, *Small Scale Mining in the Developing Countries* (UN, 1972), after which, experts became increasingly preoccupied with developing a universal definition of the term and enshrining it in legislation across the world (Hilson and McQuilken,

2014). The futility of the exercise, reflected on by Jennings (2003), quickly became apparent, primarily because of the range of activities found in this ‘space’.

Donors and organisations offer various definitions of ASM, emphasising, *inter alia*, key characteristics such as low levels of mechanisation, its largely poverty-driven and informal nature, poor standards of health and safety, and the ability to work small and marginal deposits that are uneconomical to mine on a large scale (see Hilson and McQuilken, 2014 for a comparison of definitions). In sub-Saharan Africa, ASM activities are often characterised in accordance with their mineral governance and legal frameworks that define the sector by features such as areal extent, mineral reserves, production volumes, organisation and degree of mechanisation, and numbers of people employed at sites (Table 2.1). But while these definitions differ, and the operations themselves are unique from country-to-country, in mining and mineral processing terms, the variations are negligible and would all be packaged as ‘low-tech’ and ‘labour-intensive’, the very hallmarks of all ASM. For the purposes of this thesis, therefore, ‘artisanal mining’ and ‘small-scale mining’ are used interchangeably, and the term ‘ASM’ is used as a collective term referring to all low-tech, labour intensive mineral processing and extraction found in developing countries, a position justified by the literature (UN, 1972; Bangasser, 2000; Hilson and Pardie, 2006; Hilson, 2011).

Table 2.1 Selected definitions of ASM in sub-Saharan Africa

Country	Definition
Kenya	Annual extraction of minerals or material does not exceed 25,000 m ³ ; do not employ specialised or mechanised mining technology, use of mercury, cyanide or blasting; mining operation does not involve capital investment in excess of an amount prescribed by the Cabinet Secretary. Refer only to small-scale mining.
Ghana	No exact definition, the term is used almost exclusively to refer to licensed operations based on a concession not exceeding 25 acres, along with several other pre-qualifications legislated by the Minerals and Mining Act, 2006 (Act 703); must be a citizen of Ghana; must be at least 18 years old.
Rwanda	Distinguish between artisanal, and, small-scale mining depending on: Mineral reserves (30t / 200t); production volumes (0.5 - 3t / 3t per month); capital investment (seventy million / seven hundred million Rwandan francs over 5 years; depth of mine (40m / > 40m); degree of technical know-how, use of machinery and competence.
Uganda	Prospecting or mining operations which do not involve expenditure in excess of five hundred currency points or use of specialised technology.’ Do not distinguish in the Mining Act between artisanal, and, small-scale.

Sources: Kenya Mining Act (2012); Kenya Mining Bill (2014); Government of Rwanda Mining Policy (2010); Rwanda, Order N°002/MINIRENA (2015); Uganda Mineral Policy (2000); Uganda Mining Act (2003); McQuilken and Hilson (2016).

2.2 Artisanal and Small-Scale Mining in Sub-Saharan Africa: The formalisation conundrum

For decades, policymakers and donors have worked tirelessly to formalise ASM. This, however, has proved to be particularly challenging in sub-Saharan Africa, where poverty is widespread and governance, on the whole, is weak. This section of the chapter builds the case for formalising ASM in the region, and in the process laying the foundation for critiquing the theme of ethical minerals and development, the focus of this thesis. In addition to highlighting the economic importance of the sector in sub-Saharan Africa and offering insights into the benefits to formalising its operations, the section identifies, as reported in the literature, the barriers to doing so in this environment. The section then moves on to provide a critical assessment of fair trade and its antecedents, providing initial reflections on its ability to deliver transformational change in ASM communities across sub-Saharan Africa. To conclude, the section briefly introduces the Global Production Network (GPN) – that forms both the theoretical and conceptual framework of this thesis – as a tool for reconceptualising the dynamics of informality and providing much-needed detail on the functioning of ASM operations, with which to inform the design of more robust certification initiatives and formalisation strategies for the sector.

2.2.1 Building a case for formalising ASM in Sub-Saharan Africa

The issue of formalisation in the context of ASM has attracted significant scholarly attention in recent years (e.g. Geenen, 2012; Lahiri-Dutt, 2013; Verbrugge, 2015, 2016). The bulk of this analysis has focused on the labour structures found in unregulated ASM ‘spaces’ and draws heavily on the four main theories of informality – namely, the legalist, dualist, structuralist and volunteerist schools (Chen, 2007, 2012) – to frame and contextualise phenomena. The problem with this body of scholarship, however, is that it is disconnected from the policy context, which has interpreted formalisation in the context of ASM very differently, a point which Hilson and Maconachie (2017) and Hilson et al. (2017) draw attention to. The authors also point out that the theories in which these scholars invest their analyses were informed by experiences from industrial sectors that are very different organisationally from ASM, and a long way from the high-value commodities that operators extract which are often found at the centre of complex, clandestine supply chains punctuated with criminality, illegality, embezzlement, corruption and civil violence.

From the perspective of donors and policymakers, ‘formalisation’ in the context of ASM is most closely aligned with the legalist school pioneered by the Peruvian economist Hernando De Soto (De Soto, 2000, 2002). While not stated explicitly, countless ASM texts and landmark papers (Davidson, 1993; UN, 1996; ILO, 1999; UNECA, 2002) broach the idea fairly implicitly. Elaborating on Hilson and Maconachie (2017) and Hilson et al. (2017) formalisation in the context of ASM, and ultimately what donors, policymakers and to some extent, the NGO community are attempting to facilitate, is seen here as *legalisation*. Formalisation in this case, therefore, must be viewed as a *process* that includes the licensing of activities,

the steps that must be taken to empower aspiring licensees and position them to secure the requisite permits, and the establishment of more robust support services in line with operator needs.

This is spelled out very clearly in a landmark World Bank publication, *Mining Together: Large-Scale Mining meets Artisanal Mining* (World Bank, 2009, p. 22), which states that ‘The first step before establishing a formal partnership will be to help ASM miners fully legalize and formalize their activity’, and that the ‘Regularization of artisanal miners is a necessary process in the early stages of engagement because it provides a legal framework to deal with ASM and opens the way to formalization’. This process, it is argued, requires the completion of a series of nine steps before formalisation, which it sees as involving ‘A group of ASM...try[ing] to acquire a legal status like an association, cooperative or enterprise and get registered by the administration’ (p. 23), can even be kick-started. These steps are: 1) Promote a better legal and regulatory framework; 2) Help ASM to get organised; 3) Help ASM to formalise; 4) Assign areas to ASM; 5) Provide technical assistance to ASM; 6) Employ ASM as subcontractors; 7) Implement a safety and security plan; 8) Promote diversification; and 9) Create mine-site employment. The literature touches on all of these points but the case for formalising ASM in sub-Saharan Africa rests on three main pillars, each of which are articulated relatively clearly in the literature.

Table 2.2 Numbers of small-scale miners vs. human development and multidimensional poverty indicators in select countries with more than 20,000 small-scale miners

Country	Working Directly	Human Development Index (2015)		Multidimensional Poverty (2017)		
		Value	Group*	Multidimensional Poverty Index (MPI = H*A)	Percentage of the population in multidimensional poverty (H)	Intensity of deprivation among the poor (A)
Asia						
Afghanistan	50,000	0.479	Low	0.295	56.1	52.7
China	3,000,000–15,000,000	0.738	High	0.017	4.0	41.3
India	12,000,000	0.624	Medium	0.191	41.3	46.3
Mongolia	40,000–100,000	0.735	High	0.041	9.9	41.0
Nepal	120,000	0.558	Medium	0.126	28.6	44.2
Pakistan	90,000–370,000	0.550	Medium	0.230	44.2	52.1
Sri-Lanka	165,000	0.766	High	-	-	-
Asia Pacific						
Indonesia	109,000	0.689	Medium	0.066	15.5	42.9
Papua New Guinea	50,000–60,000	0.516	Low	-	-	-
Philippines	185,400–300,000	0.682	Medium	0.052	11.0	47.3
Latin America						
Bolivia	80,000	0.674	Medium	0.089	20.3	43.7
Brazil	200,000	0.745	High	0.021	5.3	40.6
Colombia	182,000	0.727	High	0.022	5.4	40.9
Ecuador	92,000	0.739	High	0.013	3.5	38.5
Guyana	10,000–20,000	0.638	Medium	0.013	3.2	40.3
Peru	60,000	0.740	High	0.043	10.5	41.0
Suriname	20,000	0.725	High	0.024	5.9	40.8
Sub-Saharan Africa						
Angola	150,000	0.533	Low	-	-	-
Burkina Faso	200,000	0.402	Low	0.535	84.0	63.7
Central African Republic (CAR)	400,000	0.352	Low	0.403	77.6	55.5
Chad	100,000	0.396	Low	0.552	87.1	63.4
Côte d'Ivoire	100,000	0.474	Low	0.31	58.7	52.8
Democratic Republic of the Congo (DRC)	200,000	0.435	Low	0.401	75.1	53.4
Eritrea	400,000	0.42	Low	-	-	-
Ethiopia	500,000	0.448	Low	0.564	87.3	64.6
Ghana	1,100,000	0.579	Medium	0.156	33.7	46.2
Guinea	300,000	0.414	Low	0.459	75.1	61.1
Kenya	100,000	0.555	Medium	0.187	39.9	47.0
Liberia	100,000	0.427	Low	0.374	71.2	52.5
Madagascar	500,000	0.512	Low	0.357	66.9	53.3
Malawi	40,000	0.476	Low	0.251	53.7	46.7
Mali	400,000	0.442	Low	0.457	77.7	58.9
Mozambique	100,000	0.418	Low	0.389	69.6	55.9
Niger	450,000	0.353	Low	0.605	89.3	67.7
Nigeria	500,000	0.527	Low	0.303	53.2	56.8
Rwanda	36,000	0.498	Low	0.259	53.8	48.1
South Africa	20,000	0.666	Medium	0.036	9.2	39.1
Sierra Leone	300,000	0.42	Low	0.464	81.0	57.3
Sudan	200,000	0.490	Low	0.287	53.4	53.7
Tanzania	1,500,000	0.531	Low	0.284	56.6	50.2
Uganda	150,000	0.493	Low	0.367	69.9	52.5
Zimbabwe	500,000	0.516	Low	0.152	35.0	43.4

Sources: Dreschler (2001); Mutemeri and Petersen (2002); Buxton (2013); Hilson and Vieira (2007); UNECA (2011); AEITI (2016); UNDP (2016); Alkire and Robles, (2017). Note: Column H: Cells highlighted in red are countries where 50 per cent or more of the population are considered to be in multidimensional poverty. *HDI Groupings: Very high human development 0.892; High human development 0.746; Medium human development 0.631; Low human development 0.497.

The first pillar for its formalisation is the ASM sector's – often-overlooked – economic contribution, in particular, its ability to create jobs. This, however, is not only the case in sub-Saharan Africa but throughout the predominantly developing countries where activities are commonplace. Although a conservative estimate, it is now recognised that there upwards of 40 million people worldwide directly engaged in ASM (Table 2.2; Fritz et al., 2017), and at least an additional 405 million people in the downstream and upstream activities the sector 'creates', including equipment repair, catering, transport and finance (Hilson, 2002a; Buxton, 2013; Fritz et al., 2017). Though reliable numbers are hard to obtain, due to the inherent dynamism of activities and a lack of comprehensive surveys, these figures do nevertheless underscore the importance of a sector which, despite its downplaying and absence from the development agenda (Hilson and McQuilken, 2014), is now deeply-rooted in 80 developing countries worldwide and has doubled in size over the past two decades (ILO, 1999; Hilson, 2016b).³ This flurry of activity is significant because it both accounts for a sizeable share of global mineral production and supports farm-oriented lifestyles.

In regard to the former point, it is again a case of the data being incomplete but offering enough of an indication to provide some illustration. Today, there is broad agreement in the literature, based on the piecemeal information available, that ASM accounts for approximately 15 to 20 per cent of the world's non-fuel mineral production (Hentschel et al., 2002). Owing to its high value and the fact that it commonly occurs as near-surface easily extractable alluvial and placer deposits, gold is the commodity mined most widely on a small scale, accounting for 10 to 20 per cent of global production. The ASM sector is also responsible for 20, 75 and 80 percent of global production of diamonds, gemstones, and sapphires, respectively (Nöetstaller, 1987; Buxton, 2013; UNECA, 2011; DDI, 2016a).

In poor regions of the world, including sub-Saharan Africa, the importance of this production to underfunded governments at the behest of the world's International Finance Institutions (IFIs)⁴ cannot be overstated. As Hentschel et al., (2002, p. 52) explain, if the revenues from ASM activities, unearthing perhaps the most tradable commodities in the world, can be captured by the state they can contribute enormously to foreign exchange earnings and national budgets, and by extension greater fiscal independence:

At macroeconomic level, the production of high-value metals (gold), gemstones and minerals from small-scale mines can make a major contribution to foreign exchange earnings. As gold for instance is more or less a standard "currency" the produced value is equivalent to extra foreign income. This is particularly the case for artisanal small-scale mining, where no considerations of "repatriation of utilities" of foreign investors are taken into account, as the "investors" are their very own local

³ A global study by the International Labour Organisation in 1999 estimated there were 11 to 13 million people engaged in artisanal and small-scale mining in approximately 55 countries worldwide (ILO, 1999).

⁴ IFIs are institutions that provide financial support, technical advice, and promote cooperation for economic and social development in developing countries. Typically, the group of IFIs refers to the International Monetary Fund (IMF) and the five multilateral development banks (MDBs): the World Bank Group, the African Development Bank, the Asian Development Bank, the Inter-American Development Bank, and the European Bank for Reconstruction and Development (Bhargava, 2006, p. 393).

miners. In this case the value of artisanally produced gold can be considered as a net contribution to foreign income, as freely convertible “currency” is produced with pure local input.

In addition to precious metals and stones, there are also a wide variety of lesser-known development minerals⁵ that are extracted on an artisanal and small scale and essential in meeting domestic housing, infrastructure and industry demand in many developing countries experiencing rapid industrialisation. The full breadth of these development minerals is expansive, covering everything from aggregates, industrial and semi-precious minerals, dimension stones, and building materials, yet their economic importance remains to be fully realised. As such in 2015, the EUR 13.1 million Development Minerals Programme was launched by the United Nations Development Programme (UNDP), European Union (EU) and Asia Caribbean Pacific (ACP) Group of States to explore this neglected area of development (Franks, 2016; Hilson, 2016a).

Over the years, several detailed cases of ASM in selected countries in sub-Saharan Africa have been published which collectively offer a further glimpse of the sector’s economic importance in the region, despite its seemingly perpetual confinement to the informal economy. The list of case studies is exhaustive, ranging from the 500,000 diamond diggers in Sierra Leone (Maconachie, 2009), through to a similar number of 400,000 gold miners in Mali (Keita, 2001; Teschner, 2014), and estimates between 500,000 and 1.5 million gold miners in Tanzania (Fisher, 2007; Hilson and McQuilken, 2014; Buxton, 2013). However, there are two examples that further demonstrate the economic importance of ASM to the region which stand out in particular. The first being the production of coltan (columbite-tantalite and associated tantalum bearing metallic ores) and cobalt, where ASM is the primary vehicle through which they are extracted, processed, and exported. Used to manufacture the tantalum capacitors found in electronic devices such as laptops and smartphones, and the latter, a key component of lithium-ion batteries, also found in electronic devices and electric powered cars, the demand for both has soared over the past decade.⁶ With over 50 per cent of annual coltan and cobalt production originating from small-scale mining activities located in the African Great Lakes Region, mined predominantly in the Democratic Republic of the Congo (DRC) and exported through Rwanda and Uganda (BGR, 2017), the growing demand for these precious metals represents a significant economic opportunity for the region. Yet, at the same time, poses a huge regulatory challenge (the third pillar of this discussion on formalisation) given the association of the minerals’ production with armed conflict, human rights abuses and child labour in the region, as the spoils from ASM activities inevitably work their way into the supply chains of some of the world’s largest multinational electronics companies and car manufacturers such as Apple and Volkswagen (Bleischwitz et al., 2012; Moran et al., 2015; Amnesty International, 2016; Frankel, 2016).

The second example, and again focused on a particular commodity, is gold which, as noted, is the most commonly mined mineral on a small-scale (McQuilken, 2016, p. 180). Unlike with alluvial diamonds and

⁵ Development Minerals include construction materials, dimension stones, industrial minerals, and semi-precious stones and are also termed Low Value Minerals and Materials (LVMM) due to their relatively low price to volume ratio (Hilson, 2016a).

⁶ Annual global sales of smartphones have increased from 122.32 million units in 2007 to over 1,495.36 in 2016 – an increase of over 90 per cent (Statista, 2017).

certain coloured gemstones, in sub-Saharan Africa, ASM operators targeting gold are in constant competition over precious land resources with foreign multinationals, agricultural activities, and increasingly, Chinese interests (Crawford and Botchwey, 2016). Yet, despite the lack of titling and access to land with sufficient deposits, the region's ASM sector continues to account for a sizeable percentage of gold production. In countries such as Sudan, where the multinational presence is low, an estimated one million artisanal operators mined approximately 238 tonnes of gold from 2010 to 2015, accounting for 85 per cent of total gold mined in the country. To put these figures into context, the government netted USD 2.2 billion from total gold exports in 2012 alone (Ibrahim, 2015), which is equivalent to approximately 3.2 per cent of the country's USD 68.13 billion Gross Domestic Product (GDP) in the same year (World Bank, 2017). In Ghana, the case study country explored in this thesis, where foreign multinationals have controlled the mining 'space' for nearly a century, one third of gold captured by the government originates from artisanal and small-scale operations (OEC, 2017). This is despite conservative estimates that approximately 70 to 80 per cent operate informally and illegally without the necessary land titling and mining permits (Hilson and McQuilken, 2016; Crawford and Botchwey, 2016), again demonstrating its economic importance in spite of the challenges with licensing and land titling.

The latter point – how ASM competes over access to land – also speaks to the sector's rootedness in the region's rural economies and farm-oriented livelihoods, a phenomenon captured in depth in a recent review by Hilson (2016), and evidenced by numerous case studies (Binns, 1982; Wels, 1983; Chachage, 1995; Maponga and Meck, 2003; Maponga and Ngorima, 2003; Maconachie and Binns, 2007; Hilson and Van Bockstael, 2011; Kamlongera, 2011; Hilson 2011; Hilson and Garforth, 2012; Hilson et al., 2013; Hirons, 2013; Bakia, 2014; Kelly, 2014; McQuilken and Hilson, 2016). As Hilson (2016) neatly outlines, there are two main strands of discussion in the literature concerning increased rural livelihood diversification away from farming and towards ASM across sub-Saharan Africa over the past two decades. First, are the ways in which ASM has offered a vital lifeline providing farmers and their families with a refuge during times of economic, political and climatic crises, when solely agriculturally-based livelihoods have become increasingly challenging to maintain. In these instances, the higher earnings from mining are used to support farm-based livelihoods through the purchase of farm inputs such as fertilizer, seeds, and equipment no longer provided by government agencies, or in extreme cases such as conflict and the disposition of land, ASM may become the primary income earning activity replacing all but subsistence agricultural activities. For example, in 'Finishi and surrounding villages' located in the south west district of Chikhwawa, Malawi, Kamlongera (2011, p. 113) explains that while the livelihoods of the regions' inhabitants have always been 'dependent on agriculture for their survival ... efforts to maintain an exclusively farm-based livelihood have proved futile' due to drought caused by 'erratic rainfall and high temperatures (32°C–48°C)' leading to consistent poor harvests, even with the application of fertilizers, and resulting in 'many residents [having] no choice but to turn to ASM'. The second, is through the dovetailing of the two livelihood activities in seasonal cycles of production. Specifically, the ways in which ASM is undertaken during periods of reduced agricultural activity, such as dry-seasons and in between planting and harvests, with the additional earnings from mining used to supplement incomes. In

Mozambique, Mondlane and Shoko (2003) report how approximately a third of inhabitants in the rural Niassa and Manica provinces mainly engage in ASM in the rainy season to compliment incomes from agriculture (after Hilson, 2016b).

This 'branching out' into non-farm activities, such as ASM, has been broadly conceptualised in the literature through the, somewhat crude, typology of 'push and pull factors' (Ellis, 2000; Barrett et al., 2001; Reardon et al., 2001; Maclin et al., 2017) in which these two extremes used to conceptualise diversification are better envisioned as being 'divided along a spectrum of necessity versus choice' (Hilson, 2016b, p. 555). Helping to explain the growth and increased rootedness of ASM in impoverished settings, in the former, push factors are defined as 'sets of motives linked to distress that are commonly associated with risk aversion' (Hilson, 2010a, p. 298) such as population growth, scarcity of viable land, declining farm productivity, temporary climatic events or shocks such as civil war, and poor access to rural financial markets (Ranjan, 2006). While pull factors are instead conceptualised as voluntary reasons for diversifying in which individuals choose to branch-out in the belief that they will earn more money and greater wealth in non-farm activities, or through the resulting complementarities between multiple income streams (Ranjan, 2006; Hilson, 2010a, 2016b). Helping to explain the growth of ASM in a similar way, most recently a small portion of the ASM literature (Hilson and Hilson, 2015; Hilson et al., 2017) has helped cast light on the entrepreneurial narrative that has been a regular feature of debate (see e.g. Nöetstaller, 1987; Barry, 1996; Hilson and McQuilken, 2014). These scholars outline how the vast majority of miners operating in sub-Saharan Africa can be considered as poverty-driven 'necessity entrepreneurs'. Drawing on elements of the business and management literature, Hilson et al., (2017, n.p.) explain that like ASM the concept of 'necessity entrepreneurship is undertaken by people who are driven to work for survival ... using the informal sector as a safety net'. This is in opposition to the minority of 'opportunistic entrepreneurs' at the other end of the spectrum that actively choose to move into ASM in order to establish a lucrative business, and are who many policymakers continue to mistakenly believe they are dealing with (Hilson and Hilson, 2015).

Throughout sub-Saharan Africa, ASM now employs a wide range of people both 'pushed' and 'pulled' into the sector by a wide range of poverty related drivers. These include: other livelihoods such as carpentry, brick making and trading becoming less tenable and financially attractive; the need for 'fast money' to pursue employment in secondary sectors and the purchase of both basic and more luxury modern amenities such as housing, power generators, and mobile phones; and competition for job opportunities, which are few and far between, for the growing scores of unemployed youth in many burgeoning resource-rich African societies (Oramah, et al., 2015; Ackah-Baidoo, 2016). The literature is replete with case studies showing how the sector has become a haven for men, women and 'entire family units' trying to earn enough to survive in places such as Cameroon (Bakia, 2014); students funding their school and university education in Nigeria (Oramah et al., 2015); child miners rebuilding their lives in precarious diamond mining communities once ravaged by civil war and conflict in the DRC, Liberia, and Sierra Leone's 'half shovels' (Maconachie and Hilson, 2016); and larger groups of itinerant labourers often

comprising young men in search of work (Hilson, 2008a; Hilson and Osei, 2014). Ackah-Baidoo (2016, p. 258) reaffirms this latter point in a recent review of youth unemployment in sub-Saharan Africa. Through fieldwork in Ghana, again the case study country in this thesis the author explains that: 'youth are indeed drawn to the *galamsey*⁷ [illegal ASM activities] economy due to hardship brought on by a lack of employment, a problem magnified by the government's failure to generate meaningful employment for graduates and its dependency on large-scale mining, which has produced enclaves incapable of alleviating the problem'.

As well as the wide variety of people now found embedded in ASM activities at mine sites, a wealth of studies has also helped capture the diversity of roles and different organisational forms of production and labour hierarchies. These range from general labouring such as carrying, crushing and processing ore, to skilled machine work using hydraulic drills, generators, and earth moving equipment, and in ancillary roles supervising operations, bookkeeping, selling basic provisions, and catering (Labonne and Gilman, 1999; Hinton, 2005; Fisher, 2007; Hilson, 2010a; Maconachie, 2011; Hilson and Hilson, 2015; Verbrugge, 2015; Ferring et al., 2016; McQuilken and Hilson, 2016). The diversification away from solely farm-oriented livelihoods towards ASM due to 'agricultural poverty' (Hilson and Garforth, 2012) and widespread youth unemployment, in combination with the sector's ability to absorb such a wide range of people in such a wide variety of roles, especially during challenging socio-economic and geopolitical conditions, has resulted in it becoming 'one of *the* most important economic activities in the region' (Banchirigah and Hilson, 2010, p.1).

This leads to the second pillar, which concerns the impoverished state of the sector. Specifically, through formalising ASM in sub-Saharan Africa, host governments and donors commit to laying the groundwork capable of transforming what is mostly a subsistence-level industry facing enormous barriers to mechanisation into a more medium-scale and efficient sector. This is accomplished through empowering the individual operator, granting them the security of tenure and access to support services needed to gradually sever ties from actors in the informal economy. A commitment to formalisation sends the message that policymakers and donors recognise the ability of ASM to generate employment but also appreciate that it is a 'poverty-driven activity' (Hentschel et al., 2002; Hilson, 2009) which, under the current circumstances, has limited its potential to grow or confined its activities to a particular development trajectory. Its perpetual informal and by extension, illegal, state also constrains planners and donors who, despite recognising its potential and rootedness in rural sub-Saharan Africa, continue to struggle in their efforts to legitimise the sector as a focal point of the region's development policies and interventions moving forward.

The 'poverty-driven' narrative has been a regular point of discussion in the literature (Alpan, 1986; Nöetstaller, 1987; Barry, 1996; Dreschler, 2001; Jennings 2003; Banchirigah, 2006; Hilson and Pardie, 2006; Spiegel, 2009; Hilson, 2011; Hilson and McQuilken, 2014) since *officially* entering the discussion in

⁷ *Galamsey* is the term used to refer to informal artisanal miners in Ghana, and is an amalgamation and adulteration of the phrase 'gather and sell' (Tscharckert and Singha, 2007; McQuilken and Hilson, 2016).

1995, at the World Bank-hosted *International Roundtable on Artisanal Mining*. Here, the broad consensus was that, 'to a large extent, informal mining is a poverty-driven activity' (Barry, 1996, p. 1). This phenomenon is perhaps most visible in sub-Saharan Africa, a region, which, despite being endowed with rich and relatively untapped mineral and fuel resources (OECD, 2014), is the location of some of the world's poorest people (Tables 2.2 and 2.3). Here, the importance of ASM to rural job creation, poverty reduction and national budgets is even more pronounced, its activities providing direct employment to as many as ten million people; an additional 30 million people depend on the sector for their livelihoods in ancillary activities (AU, 2009; Perks, 2011).

The region also consistently scores poorly on most social development indicators. In the 2016 Human Development Report (UNDP, 2016), sub-Saharan Africa had the lowest Human Development Index (HDI). The Index grouped the region as having 'Low Human Development', placing it just above the 'least developed countries' and inside the 'developing countries' cut-off values of 0.508 and 0.668, respectively (UNDP, 2016). Furthermore, as Table 2.2 illustrates, in almost every country in the region with a sizeable ASM workforce, over 50 per cent of the total population is considered to be living in multidimensional poverty. Numerous studies have illustrated quite clearly the links between increasing poverty and the growth of ASM in the region as people, pushed by poverty, have entered the sector. As is documented in a growing body of literature (Scoones, 1998; Hilson and Potter, 2005; Banchirigah, 2006; Hilson and Garforth, 2012), throughout the region ASM provides immediate economic relief to a range of individuals, including educated and highly skilled people made redundant under World Bank led Structural Adjustment Programmes (SAPs), as well as subsistence small-scale farmers who have struggled to compete in what has become an increasingly globalised and liberalised agricultural market since the late 1980s.

Table 2.3 Human development indicators by region

	Human Development Index 2015 (HDI)		Life expectancy at birth (years)	Expected years of schooling	Mean years of schooling	Gross national income (GNI) per capita (2011 PPP [†] USD)
	Value	Group*				
Arab States	0.687	Medium	70.8	11.7	6.8	14,958
East Asia and the Pacific	0.720	Medium	74.2	13	7.7	12,125
Europe and Central Asia	0.756	High	72.6	13.9	10.3	12,862
Latin America and the Caribbean	0.751	High	75.2	14.1	8.3	14,028
South Asia	0.621	Low	68.7	11.3	6.2	5,799
Sub-Saharan Africa	0.523	Low	58.9	9.7	5.4	3,383
Ghana	0.579	Medium	61.5	11.5	6.9	3,839

Source: UNDP (2016). Note: The Human Development Index is a composite indicator designed to measure development achievements in three key indicators – a long and healthy life, education, and a decent standard of living. While individual values are of little use on their own, the index allows for broad, high-level comparisons in human development to be made between different countries and regions. *HDI Groupings: Very high human development 0.892; High human development 0.746; Medium human development 0.631; and Low human development 0.497. [†] Purchasing Power Parity (PPP).

The economic crisis that gripped much of the world in the early 1980s, blamed largely on protectionist government policies of the previous decades, sparked the implementation of neoliberal reforms including deregulation, and privatisation of state assets, auctioned off in rapid fire sales, sparking a 'race to the bottom' in the extractive industries as countries competed to attract foreign investment (Otto, 1998; Campbell, 2001; 2003), as well as widespread cuts to social services and government funded subsidies in sectors such as agriculture in order to balance national budgets (Fridell, 2004; Willis, 2011). Left unable to service their mounting debts, and in return for continued financial support from the IFIs, the crisis meant many developing countries had little choice but to adopt these reforms under the auspices of SAPs. These packages were implemented from the 'top-down', in which poverty was defined mainly in economic and material terms (Laderchi et al., 2003; Green and Hulme, 2005). Proponents of SAPs maintained that economic 'trickle-down' would result, leading to eventual poverty reduction and a distribution of benefits to all members of society, however, the widespread and immediate changes under adjustment did nothing of the sort.

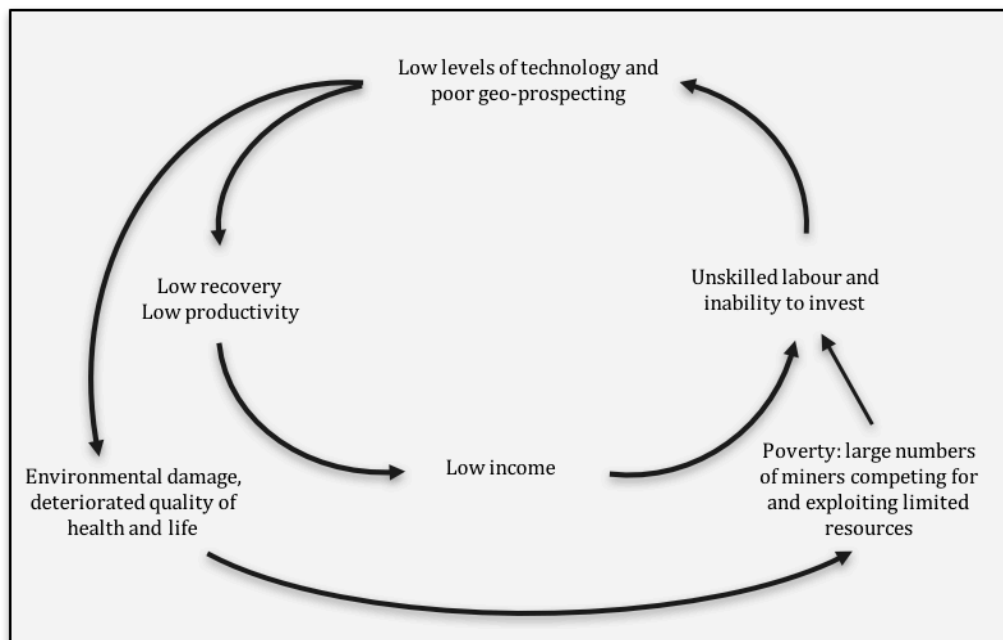
Instead the literature offers a glimpse of how SAPs further entrenched poverty across sub-Saharan Africa, in turn making agricultural livelihoods less tenable and creating pools of unemployed people, many of whom ended up pursuing employment – being 'pushed' – into informal ASM communities (Riddell, 1997; Chilowa, 1998; Crisp and Kelly, 1999; Bryceson and Bank, 2001; Laderchi, et al., 2003; Haselip and Hilson, 2005; Green and Hulme, 2005; Hilson, 2010a). As Bryceson (1999, p.173) elaborates:

SAP[s] ... resulted in a plethora of changes in rural productive and marketing infrastructure that often increased rather than decreased uncertainty. Many remote peasant farming areas experienced a decline in marketing services and the removal of subsidies on agricultural inputs, especially fertilizers, made the production of several peasant crops unviable ... This environment induced a large-scale search for new, more remunerative activities outside of agriculture.

In Ghana, the case study country explored here, Banchirigah (2006), for example, reports that following the implementation of World Bank reforms 80,000 jobs were lost on the Cocoa Board and 45,000 civil servants were immediately redeployed. Additionally, Hilson (2010) connects the sale and mothballing of the then state-owned Ghana Consolidated Diamonds Ltd. mine in 2009 with an increase in illegal artisanal gold mining in the area, as retrenched workers were driven into the ASM sector by poverty and the desire to continue a familiar economic activity. Similarly, in Tanzania, following the introduction of SAPs in 1986, 50,000 civil servants were immediately retrenched (Banchirigah, 2006). Here, the removal of fertilizer subsidies and a decline in the value of cash crops, the latter being a result of liberalised and flooded markets, have pushed farmers to 'branch out' and diversify their livelihoods into non-farm activities, thus fuelling a more pronounced trend of 'de-agrarianization' across sub-Saharan Africa. These conditions have proved to be fertile for the growth of informal sectors such as ASM, which, with its low barriers to entry, has absorbed millions of rural Africans over the past two decades (Spiegel, 2009; Banchirigah and Hilson, 2010).

However, while enabling people to escape extreme poverty and earn enough of an income to survive, once rooted in the informal economy it can be difficult for ASM operators to escape and improve their living standards as they become trapped in cycles of poverty. Hilson and Pardie's (2006) 'poverty trap' (a revised version of Nöestaller's (1994) diagram) shown in Figure 2.1 explains this dynamic: low levels of technology and poor geo-prospecting lead to low recovery and productivity, and thus reduced revenues and an inability to accumulate funds and return investments to debtors. A lack of capital to improve methods and acquire more efficient equipment traps miners in rudimentary, inefficient mining and processing. Poor quality of life and health as a result of dangerous working conditions and practices exacerbates the poverty cycle further. These factors are compounded by a large number of miners competing for limited land and resources — keeping them trapped in the informal economy and preventing them from accumulating capital and investing to improve their situation.

Figure 2.1 The poverty trap in ASM



Source: Reproduced from Hilson and Pardie (2006)

The vast majority of 'trapped' individuals have failed to accumulate incomes under what are clearly very difficult and dangerous working conditions. In their battles to secure a daily wage, the largely informal and unlicensed status of artisanal and small-scale miners has given rise to a host of well-documented negative environmental and social impacts. These include: the pollution and destruction of water bodies vital to local communities; deforestation, land degradation and destruction of farmland due to clearance for mining activities; and extensive cyanide and mercury pollution throughout local communities (Crispin, 2003; Hilson et al., 2007; Bose-O'Reilly et al., 2008; Spiegel and Veiga, 2010). The latter two issues are associated with the processing (leaching and amalgamation) of gold, respectively (Aryee et al., 2003; Hinton et al., 2003; Gunson et al., 2006; Hilson et al., 2007). Along with a suite of other socio-economic challenges, including: child labour; poor health and disease associated with dangerous working conditions; lack of worker's rights; below market rates for extracted minerals; gender disparities; and

general community impoverishment (Hinton et al., 2003; Jennings, 2003; Seeling, 2003; Hilson, 2012; Maconachie and Hilson, 2016; Mwakumanya, et al., 2016; Rickard et al., 2017). Furthermore, in fragile states and countries where the rule of law is weakened, criminality and social ills such as prostitution, human trafficking, and forced labour associated with ASM activities have been documented (Bryceson et al., 2013; Hidrón and Koepke, 2014; Kelly et al., 2014), and in rush-type situations where more rudimentary mine camps spring up with little or no sanitation, many detrimental health impacts including increased instances of water borne disease, HIV/AIDs and other sexually transmitted diseases, as well as substance abuse have all been recorded (Lynas et al., 2014; Basu et al., 2015; Sagaon-Teyssier et al., 2017). The need to address these ‘expressions of informality’ (Hilson et al., 2013) and improve the living conditions and life prospects of small-scale miners and their communities is, therefore, very real.

Yet, without a recognised legal position it is difficult for governments, donors, NGOs and much-needed support services to reach impoverished miners in order to address these deep-rooted development challenges and harness the sector for social development and economic growth (Tschakert and Singha, 2007; Tschakert, 2009). The third pillar that the case for formalising ASM in sub-Saharan Africa therefore rests on is regulation: ‘Regularization of artisanal miners is a necessary process in the early stages of engagement because it provides a legal framework to deal with ASM and opens the way to formalization’ (World Bank, 2009: 22). Indeed, while most, if not all, African countries have, since the early 1990s (Hentschel et al., 2002, p.9), set out to legalise activities and established governance frameworks for the sector, which at the core require operators to secure a licence before engaging in work, for a variety of reasons regulation has roundly failed to ‘open the way’ to formalising the millions of miners operating throughout the region whom have instead become more embedded in the informal economy and further entrenched in cycles of poverty. A regular and contemporary point of discussion (Maconachie and Hilson, 2011; Geenen, 2012; Hilson, 2013; Hilson and McQuilken, 2014; O’Faircheallaigh and Corbett, 2016; Hilson and Maconachie, 2017; Hilson et al., 2017), there are a number of reasons identified in the literature as to why this has been the case.

First, and taking a step back, is the global extractives agenda and wider policy context within which the ASM sector finds itself embedded at both international and national scales. Namely, a regulatory framework that is, by and large, geared towards attracting foreign direct investment and exploiting mineral and hydrocarbon reserves on an industrial scale – the so-called ‘large-scale mining bias’ (Hilson, 2017a) that has gripped the continent for decades. Brought to the fore by Hilson, (2017a), this approach is deep-rooted within the strategy taken by the world’s multilateral organisations and donor bodies towards the ASM sector over the past three decades, as captured in the World Bank’s early 1990s report *A Strategy for African Mining* (World Bank, 1992, p. 22):

There is no good reason to create differential access to mineral rights for different classes of mining investor. A state mining enterprise should compete on the same terms as a privately-owned

company, foreign on the same terms as national, large companies under the same broad rules as small ones.

The result is that not only has the sector struggled to find a space in policy and regulatory frameworks that promote and prioritise large scale extraction (Hilson and McQuilken, 2014), but that impoverished small-scale operators have also been forced to unfairly compete with multinational mining organisations which have vast sums of finance and resources at their disposal. In the DRC, which embarked on a series of mineral reforms in the early 2000s, Geenen (2012, p. 325) describes how ‘the law contains very few provisions for artisanal mining’ and outlines that while the ‘Ministry of Mines may demarcate artisanal exploration zones (AEZ) ... in areas not suited for’ industrial exploitation, they can be closed down should they no longer be justified, or a new deposit be discovered within the bounds that warrants industrial extraction. Furthermore, sites covered by large scale mining titles cannot be transferred to an AEZ, meaning vast swathes of under-utilised land, or pockets within concessions uneconomical to exploit on a large scale but viable for ASM activities, can become tied up by industrial exploitation permits valid for a period of 30 years, while miners wishing to work inside an AEZ have to purchase an ‘official authorization to mine’ that must be renewed annually. As such, ‘large-scale actors can always have the upper hand’. This power in-balance has continued to play out across the sub-Saharan region for decades, often resulting in the encroachment of small-scale miners onto large-scale concessions and conflict over access to mineralized land (Chachage, 1995; Okoh, 2013; Hilson, 2002b Hilson and Yakovleva, 2007; Carstens and Hilson, 2009; Nyame and Blocher, 2010; Verbrugge, 2017).

Second, is the disjunction between legislation, policy rhetoric, and implementation over time: ‘A ... feature of policy and regulation of ASM is that very wide gaps can exist between the content of legislation dealing with ASM; ASM policies publicly espoused by political leaders (‘policy rhetoric’); and the policies and practices actually implemented and enforced ‘on the ground’ by government agencies and actors’ (O’Faircheallaigh and Corbett, 2016, p. 964). This is exemplified in Ghana where despite formal ASM regulations and policies that, purportedly, uphold the rights of their citizens to mine on an artisanal and small-scale and provide additional support such as opportunities for training, access to finance and equipment, and help with obtaining a licence, the public narrative from various officials instead regularly refers to informal operators as ‘criminals’ and a ‘menace’ in need of eradication while mobilising vast resources, seemingly overnight, to implement military-led task forces, confiscate and destroy equipment, and to shut down operations (Armah et al., 2013; McQuilken and Hilson, 2016; O’Faircheallaigh and Corbett, 2016; Abdulai, 2017).

A similar disconnect between policy rhetoric and implementation can also be found in the largely failed attempts to create ASM zones. Having first been recommended in a landmark paper by Davidson (1993) in the 1990s, ASM zones have been a regular feature of a number of African countries’ mineral governance frameworks over the past three decades, including the DRC, Ghana, Mozambique, and Tanzania. Furthermore, in recent years ASM zones have found renewed favour amongst land use

planners seeking to resolve increasing conflict between large-scale mining and ASM that has arisen from extensive exploration and mining licences being awarded to multinationals and overlapping claims resulting from outdated land management and record-keeping practices as the competition for workable land intensifies (Siegel and Veiga, 2009; Steinmüller, 2017). However, as Steinmüller, (2017, p. 9) reports, 'the zones are not always chosen based on sound geological assessment and ASM requirements' and as such 'often do not have enough mineral resources and are not appropriate for longer-term ASM mining'. Again, while ASM activities have been legalised, the regulatory frameworks and policies put in place have failed to formalise the sector due to a policy disconnect and poor implementation, and instead neglected an indigenous ASM sector, able to provide jobs and a regular income for many thousands of rural inhabitants, in favour of immediate foreign direct investment.

Third, and relatedly, where regulatory and licensing regimes have been implemented, they are, by and large, inappropriate and exclusionary further distancing small-scale operators from the legal space. As Mutemeri et al., (2016, p. 654) explain: 'the prevailing legislative paradigm for ASM in Africa is one of authorisations and permits ... placing the sector within a bureaucratic framework'. The result is that policymakers have, through inappropriate regulation, created the conditions for illegality and informality to thrive. As the authors go on to lament 'this set of arrangements reflects an awkward regulatory fit that comes from the scaling down of the logics of regulation that govern large-scale mining' (*ibid*). The first pertinent example is the costly, and in many cases, overly-burdensome licensing processes which have instead fuelled the growth of illegal operations by precluding many operators from gaining a licence and transitioning to the legal sphere in the first instance. In Liberia, as Hilson and Bockstael (2011, p. 1046) detail, to obtain a Class C licence – permitting only surface mining of an area no greater than 25 acres – an annual fee of USD 150 is required, with an additional USD 150 demarcation fee, payable to the Ministry of Lands, Mines and Energy (MLME) minerals inspector, also needed. Considering that additional 'tips' to various ministry officials may be required along the way, and that the annual gross national income (GNI) per capita⁸ in Liberia was, at the time of the authors' writing, approximately USD 300 the cost of a licence is out of reach for the vast majority. Demonstrating these challenges are not isolated cases, similar difficulties have also been reported in: the DRC, where Geenen (2012, p. 325) critiques that the need to demonstrate 'minimal financial capacity' as the only prerequisite to obtaining a mineral research permit (*permis de recherches*) 'de facto already excludes small-scale actors or artisanal miners'; in Ghana where a lengthy licensing process, which on paper should take 90 days, has been reported to take anywhere from one to three years and often sees prospective licensees submitting multiple copies of the same forms, and accruing additional costs 'chasing' their applications in the capital Accra (Aryee et al., 2003; Hilson, 2013; Hilson and Hilson, 2015; Hilson and McQuilken, 2016; Crawford and Botchway, 2016); as well as in Zimbabwe where small-scale miners have been required to undertake an expensive and technically burdensome environmental impact assessment reported to be in excess of USD 4,000 in 2009 (Hinton et al., 2010).

⁸ GNI is a measure of the value of a country's income, in USD, in a year divided by its population, thereby reflecting the average annual earnings of a country's citizens.

Furthermore, as Table 2.1 at the beginning of Chapter 2 shows (see Mutemeri et al., (2016, p. 655–656) for a further comparison of ASM definitions and governance frameworks), by using arbitrary provisions based on large scale mining governance frameworks in order to define and subsequently regulate the ASM sector, such as mineral reserves and areal extent, and by placing limits on mining depth (regardless of the ore body's size or shape), capital investment and the degree of mechanisation, features that without restrictive thresholds could instead be used to improve the efficiency, livelihood outcomes, and environmental impacts of operations, many of the regulations are ill-suited and 'technically unworkable or undesirable' thereby 'making it difficult to build a business case for a viable ASM operation' (Mutemeri et al., 2016, p. 654). In sum, rather than designing ASM regulatory and policy frameworks from the bottom-up, in an inclusive pro-poor way that takes into consideration the specific dynamics of the sector and challenges operators face at the local level, a point that will be returned to regularly throughout this thesis, regulatory regimes have instead been based on taking the prevailing structures for large-scale mining and reducing them to 'fit' ASM.

To surmise the salient points at the crux of this discussion on regulation: though a necessary and fundamental pre-requisite to formalisation, to date, regulatory efforts have largely failed, as while ASM has been *legalised* it has been side-lined in a policy space that favours foreign capital and large scale operations; the subject of disjointed policy responses and rhetoric versus much-needed attention and support; and governed by inappropriate legal frameworks which are disconnected from the realities of impoverished communities on the ground that have instead, and to its detriment, placed the sector on a level playing field and forced it to compete *vis-à-vis* large scale operations. As a result, policymakers have in effect *created* the conditions for illegality and informality to grow and persist (Hilson, 2013; Hilson and Hilson, 2015; Hilson et al., 2017), enabling the resultant deleterious social and environmental impacts to flourish. In order to address these expressions of informality, a more consistent, robust, and bottom-up approach to regulation is therefore needed to, first and foremost, bring the majority of operators into the legal domain from where the developmental challenges can be addressed, and the economic benefits of the sector harnessed as part of a holistic formalisation process. A detailed understanding of the sector's dynamics at the local level is a key first step in this process.

2.2.2 Building a case for ethical mineral certification in sub-Saharan Africa

Over the past three decades, several policy, technological and educational interventions have been made to support ASM in sub-Saharan Africa. These range from the implementation of more efficient and environmentally friendly equipment such as sluice boxes and mercury retorts (Hinton et al., 2003; Hilson and Maponga, 2004; Veiga, 2004; Hilson, 2007); donor-led educational programs about pressing concerns such as the environmental impacts of activities and human health (UNEP, 2012; Richard et al., 2014; IOMC, 2015; UNEP, 2015; PanAfGeo, 2017); and financial support, equipment hire, and central processing schemes (Hentschel et al., 2002; UNECA, 2002; Yakubu, 2003; Hilson, 2007; Childs, 2008). Undertaken largely in isolation, implemented ad hoc, and coordinated outside of the main rural development apparatus (Hilson and McQuilken, 2014), most of these promising initiatives have, to echo the words of

ILO officials, enjoyed 'relatively short-lived success' because of 'the low priority given by governments to small-scale mining' and once 'left to stand on its own, it has often gently wound down due to a lack of continued government support or supervision' (ILO, 1999, np). The improvement facilitated by the donor-led support implemented during this period, assistance that has amounted to tens of millions of dollars, has been underwhelming, underscoring the need for more innovative approaches and strategies.

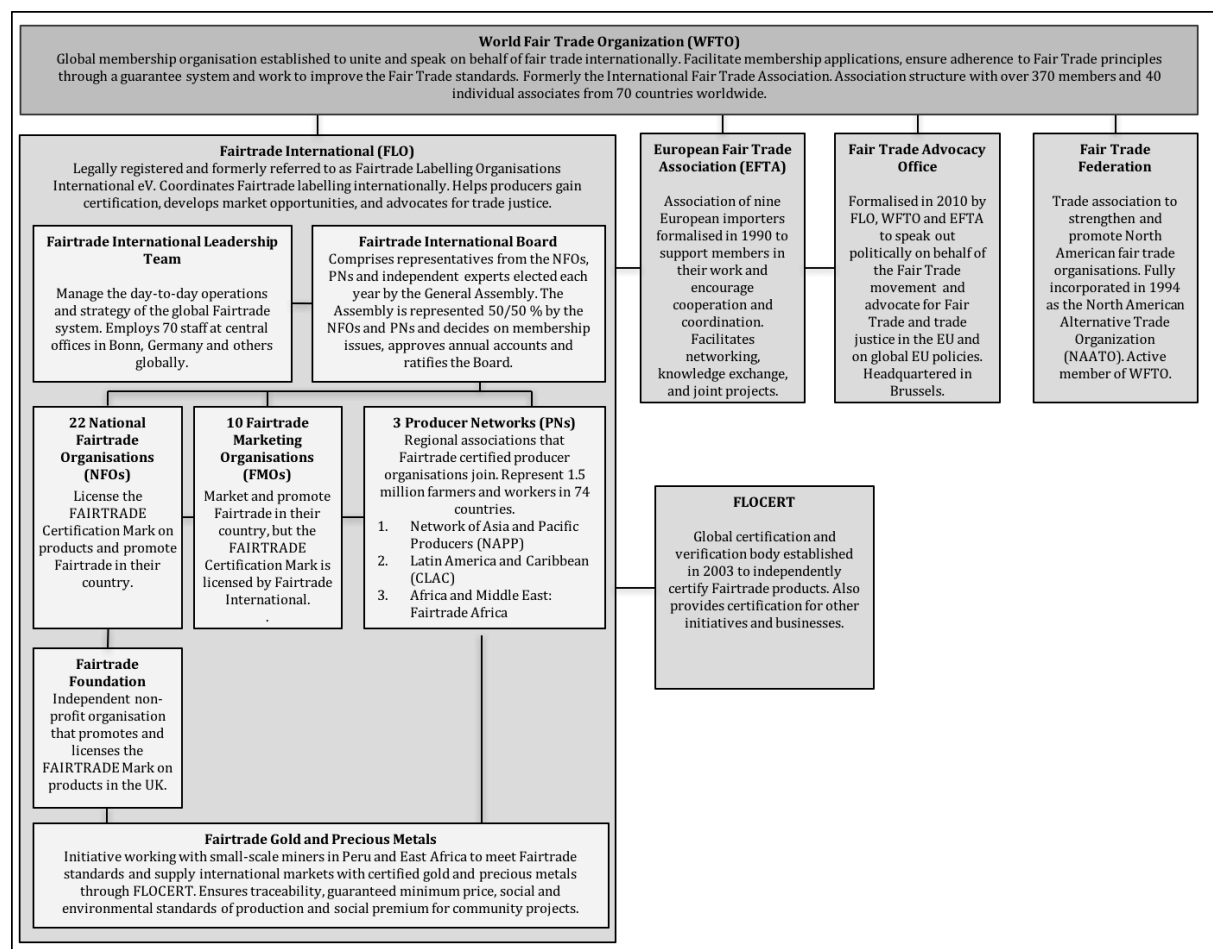
Fair trade is one such solution, its emphasis on connecting producer to consumer representing a radical departure from the focus 'on finding technical solutions to mining and processing problems, with scant heed being paid to the underlying economic, labour and social issues' (ILO, 1999) which ILO officials suggest has long plagued efforts to support ASM worldwide. In sub-Saharan Africa, a host of ASM fair trade-type projects – referred to here as 'ethical mineral certification schemes' – have emerged in recent years. Shaped heavily by an extractive industries and development agenda which is focused largely on ensuring transparency of financial transactions and delivering product that can be tracked to the source (World Bank, 2009; Hilson, 2014; UN, 2014; OECD, 2016; EITI, 2017; NRGI, 2017), these ethical mineral schemes seek to connect retailers or manufacturers with ASM operators, through systematic programs which empower them and raise their living standards. The 'successes' of fair trade's forays into agriculture, and its deeply-rooted foundation in the sector, no doubt provided the inspiration for these schemes.

The literature of the past 15–20 years is replete with analyses, critiques and summaries of fair trade's origins and impact in the agricultural market. It began as a broad social movement in the 1940s and 1950s, coalescing into a disparate handful of charity shops and alternative trading organisations (ATOs) selling handicrafts from producers in developing countries, and a wider political movement with advocates seeking fairer trading terms in international markets at various global trade forums. This *Fair Trade Movement* galvanised into a unified vision towards the end of the twentieth century, underpinned by *unequal exchange* (Prebisch, 1950), *Dependency Theory* (Furtado, 1976) and *World Systems Theory* (Wallerstein, 1974), scholarship which itself emerged in response to growing attention paid to the visible lack of social and economic progress in developing countries – mostly, sections of Latin America – in the 1970s (Willis, 2011). The wider movement sought to establish an alternative trading system based on strong market interventionism aimed at putting subsistence farmers in developing countries in a position to receive fairer prices for their produce.

Following the push for greater neoliberal reforms in the wake of the global economic crisis in the 1980s and the failure of the movement to facilitate more equitable trading terms in international policy, fair trade experienced a significant transformation: it would become anchored by a series of market-based certification and labelling schemes, a story which the literature chronicles in-depth (Barratt Brown, 1993; Hudson et al., 2013; Fridell, 2004, 2006; Moberg and Lyon, 2010). Today, the more watered-down and expansive *Fair Trade Network* (referred to generally as fair trade throughout the thesis) can therefore be defined as an 'approach to conventional trade that aims to improve livelihoods and well-being of small

producers by improving their market access, strengthening their organisations, paying them a fair price with a fixed minimum, and providing continuity in trading relationships' (Giovannucci and Koekoek, 2003, p.38). As Figure 2.2 illustrates, it is a highly organised, complex and bureaucratic network of organisations such as Fairtrade International, producer groups and even multinational companies, which brings tens of thousands of certified products to market each year under the banner of 'fair trade' and overseen by the World Fair Trade Organization (Figure 2.2). In 2015, global sales of Fairtrade-certified products, the largest and most widely recognised of all ethical labelling and certification schemes (GlobeScan, 2015), coordinated by FLO and boasting a portfolio covering over 4,500 separate products, were an estimated EUR 7.3 billion (FLO, 2016).

Figure 2.2 Organisation of the global fair trade network and Fairtrade International



Sources: EFTA (2016); Fairtrade International (2016); Fair Trade Federation (2016); Fairtrade Gold (2016); FLOCERT (2016); WFTO (2016).

In sub-Saharan Africa, fair trade and allied certification initiatives have certainly made their mark over the past two decades. Accompanied by 'feel good' stories and images of smiling producers sited in nondescript rural African idylls, FLO, and by way of extension Fairtrade Africa (which includes Africa and the Middle East), have become accomplished at communicating their successes through their distinctive

packaging⁹ and in their annual reports. In their 2014–2015 review, Fairtrade Africa reported that it was working with 430 producer organisations to ‘receive better prices, decent working conditions and fair terms of trade’ (Fairtrade Africa, 2015), supporting 932,100 farmers and workers who received a total of EUR 21.3 million in Fairtrade premiums in 2013. Case studies presented in the report which detail a range of projects with local partners, point to how over 14,682 farmers in Kenya, Uganda, and Tanzania and Rwanda have been trained on sustainable agricultural land management practices (Fairtrade Africa, 2015: 8) as well as how over USD 3.5 million in loans have been paid out to producer organisations in East and West Africa as part of a 2014 *Access to Finance* project (Fairtrade Africa, 2015, p. 10).

In addition to these self-reported successes, the academic literature, though mixed in its appraisal of the longer-term sustainability and developmental impacts (Arnould et al., 2009; Balineau, 2013; Meemken et al., 2017), has highlighted the multiple benefits associated with fair trade certification schemes (see Giovannucci and Ponte, 2005). The list includes improvements in producer organisations’ governance and management, and bargaining power (Ronchi, 2006; Becchetti et al., 2008; Ruben and Fort, 2012 – after Balineau, 2013); facilitating export opportunities and diversification through supporting market access and the provision of financial, social and physical capital (Smith, 2013); access to, and the creation of, premium markets and higher economic returns as a result (Bacon, 2005; Arnould et al., 2009; Podhorsky, 2015); increases in environmentally friendly and sustainable practices (Giovannucci and Ponte, 2005); the recent development of ‘South to South’ fair trade markets in countries such as South Africa and India (Doherty et al., 2015; Hughes et al., 2015); and ‘spill-over’ effects in terms of improvements in yields and farming techniques experienced by non-certified producers in adjacent communities (Rogers, 1962; Granovetter, 1973; Ponte and Kawumu, 2003). Inspired by these changes, conceivers of ethical mineral schemes believe that similar feats can be achieved in the ASM sector in sub-Saharan Africa and elsewhere in the developing world.

The broad range of ethical mineral certification schemes, and accompanying labelling initiatives and standards that have emerged for mining and the jewellery industry over the past decade (Table 2.4) have materialised at a time when, as indicated, the extractive industries development agenda has become preoccupied with transparency and traceability. A combination of factors have given rise to this, including growing public awareness of blood diamonds and conflict minerals (Global Witness, 2010; Barume et al., 2016); the introduction of conflict mineral and due diligence legislation such as the 2010 Dodd-Frank Act, Section 1502 which requires US manufacturing companies to disclose the chain-of-custody of minerals originating from the African Great Lakes region (SEC, 2012), and the European Union’s recently passed conflict minerals regulations (EU, 2017/821); industry guidance for companies on supply chain reporting, such as the Organisation for Economic Co-operation and Development’s *Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas* (OECD, 2016); and growing demand from a core group of concerned jewellers, activists and consumers for ‘ethical jewellery’ produced in a socially environmentally responsible manner; as well as the growing market for ethical

⁹ A 2014 third-party survey found 78 per cent of consumers, and 97 per cent of 13-20 year olds recognise the Fairtrade Foundation label in the UK (Fairtrade Foundation, 2014).

consumerism (Childs, 2008; Hilson, 2008; Valerio, 2013; Blackmore et al., 2013; Echavarria, 2014; Hilson et al., 2016; Fritz et al., 2018). In response, a series of schemes have emerged in the extractive industries and development 'space', each featuring some type of certification, defined here as 'the procedure by which an independent or third party provides assurance that a product, process or service complies with a given set of production standards' (FAO, 2003). Several fall into what is referred to here as the 'chain-of-custody' mineral certification category. Most of these schemes were developed by international donors, are backed by influential industry bodies and multinational mining companies and are predominantly concerned with stopping conflict which their conceivers believed are linked in some way to ASM. They emphasise traceability, aiming to deliver minerals transparently from mine to market and striving to be associated with production processes that are free from conflict and human rights violations. These schemes are conceived with a view toward meeting international trading and due-diligence regulations, and to position businesses to provide assurances to end-consumers and access to the ethical jewellery market (Levin, 2010). Alongside these interventions a second category of schemes has emerged: a series of industry-led voluntary and non-voluntary standards, as well as guidance documents that prescribe minimum conditions to members regarding the production, operation, and trading of minerals. This group of 'industry certification guidance and standards' often makes use of other certification initiatives or complements them in order to ensure compliance with international and chain-of-custody regulations, thus assisting companies in their efforts to adhere to ethical business principles and 'boost their business by becoming certified' (OECD, 2016, p. 1). From the literature, it is clear that these two categories of interventions have considerable overlaps (Levin, 2010; Blackmore et al., 2013; Echavarria, 2014; McQuilken, 2016; Hilson et al., 2016).

The final category, 'ethical mineral certification schemes', is the main subject of focus in this thesis. The schemes in this category are generally NGO-led and fall, predominantly, under the umbrella of fair trade and, unlike the previous two categories of schemes, directly focus on – or purport to target – ASM. Drawing heavily on fair trade certification models, conceivers of these interventions claim to link impoverished ASM operators to Western jewellers and consumers, following supply chain certification schemes which mirror those that have long been in place for 'tropical' agricultural products such as tea, coffee, cocoa and bananas (Hilson, 2014). At the core of these schemes, they aim to provide assurances over the origin and traceability of the minerals, ensure minimum social and environmental standards of production, provide access to markets, as well as a guaranteed price of at least 95 per cent market value¹⁰ for their gold and a social premium for community development projects. For Fairmined Gold, the social premium is set at USD 4,000 per kg. An additional USD 2,000 per kg is also payable (making USD 6,000 per kg in total) as an 'ecological premium' if the operations meet certain environmental criteria such as mercury-free production. The same is true for Fairtrade Gold, except that the additional ecological premium is calculated based on 15 per cent of the LBMA fix (Fairtrade International, 2013; ARM, 2014c; McQuilken, 2016).

¹⁰ The price is fixed daily by the London Bullion Market Association (LBMA).

Table 2.4 Select certification schemes for the minerals sector

Intervention	Organisation	Main Mineral	Main Target	Year
Ethical Mineral Certification Schemes for ASM				
Diamond Development Standard™ (MDS)	Diamond Development Initiative (DDI)	Diamonds	ASM	2005
Fairmined Standard for Gold	Alliance for Responsible Mining (ARM)	Gold	ASM	2009
Fairtrade Standard for Gold	Fairtrade Labelling Organization International and Fairtrade Foundation UK	Gold	ASM	2009
Chain-of-Custody certification schemes				
Certified Trading Chain (CTC)	Bundesanstalt für Geowissenschaften und Rohstoffe (BGR) in Hannover [Federal Institute for Geosciences and Natural Resources]	Tin, Tungsten, Tantalum ores, Gold (3TG)	Supply Chain	2002
Kimberley Process Certification Scheme (KPCS)	United Nations, Industry, Civil Society, Governments	Diamonds	Supply Chain	2003
Chain-of-Custody (CoC)	Responsible Jewellery Council (RJC)	Gold, Platinum Group	Jewellers	2005
ICGLR Regional Certification Mechanism (RCM)	International Conference on the Great Lakes Region (ICGLR)	3TG	Supply Chain	2006
ITRI Tin Supply Chain Initiative (ITSCi)	International Tin Research Institute (ITRI)	Tin	ASM and large scale Tin buyers	2009
Better Gold Initiative	Swiss State Secretariat for Economic Affairs (SECO) and Swiss Better Gold Association (SBGA)	Gold	ASM and Refiners	2012
Just Gold Project	Partnership Africa Canada	Gold	ASM	2015
Industry Certification Guidance and Standards				
Fair Trade Gems	Columbia Gem House	Gemstones	Large scale mining	2005
Code of Practices	Responsible Jewellery Council (RJC)	Gold, Diamonds, Platinum Group Metals	RJC Members	2009
Conflict-Free Gold Standard	World Gold Council (WGC)	Gold	Large scale mining but open for ASM	2010
Responsible Gold Guidance	London Bullion Market Association (LBMA)	Gold	Refiners / Traders	2011
Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas	Organisation for Economic Cooperative and Development (OECD)	Minerals from conflict areas	Companies / supply chain	2011

Source: Adapted from Hilson et al., (2016). Additional data: World Gold Council (2012); OECD (2016); KPCS (2017); PAC (2017).

To date, several ethical mineral schemes have been launched but three in particular are making their mark in sub-Saharan Africa. These are: 1) The Alliance for Responsible Mining's (ARM) *Fairmined Standard for Gold from Artisanal and Small-Scale Mining, Including Associated Precious Metals* (Fairmined Standard); 2) Fairtrade International's (FLO) *Fairtrade Standard for Gold and Associated Precious Metals for Artisanal and Small-Scale Mining* (Fairtrade Standard); and 3) the Diamond Development Initiative's (DDI's) soon-to-be-launched *Maendeleo [Development] Diamond Standards™* (MDS) that is looking to target artisanal and small-scale diamond mining diamond communities in the DRC, Guinea, and Sierra Leone.¹¹ All three claim to be focusing on ASM, projecting themselves as development interventions that

¹¹ From mid-2016 onwards DDI literature refers to the *Maendeleo* Diamond Standards™ – previously Development Diamond Standards. *Maendeleo* is a Swahili word meaning 'development' which also 'connotes ideas of improvement and advancement' (DDI, 2016c, p. 2).

are capable of transformational change and the empowerment of ‘responsible’ artisanal and small-scale miners (Maldar, 2011; McQuilken, 2016; DDI, 2018a) as well as claim to be supporting the formalisation of the sector while simultaneously addressing its suite of social and environmental ills (see Appendix 1 for more detail on each scheme). In the case of the former two initiatives, a number of pilot projects have been implemented across the world. While the *Maendeleo [Development] Diamond Standards™* are still being developed to some extent, both the *Fairmined* and *Fairtrade* schemes are in operation, having been piloted in Latin America and more recently adopted in sections of sub-Saharan Africa (Hilson and McQuilken, 2016). The MDS has not yet reached this point but the DDI has initiated pilot work in 14 communities in Sierra Leone, and has plans to expand its work in the DRC and West Africa in 2016–2017 (DDI, 2016a, 2016b, 2016c). As Table 2.5 and 2.6 illustrate, collectively, these three schemes have advanced considerably in the region since their conception. The implementing agencies have already overcome significant challenges in bringing their standards to fruition, ‘an unprecedented feat that has become a story of legend in mining and development circles’ (Hilson and McQuilken, 2016, p. 182). They have also shown a willingness to pursue certification of a diverse range of ASM cooperatives across three continents, and have had considerable ‘successes’ with the, few, certified mining communities they are working with. These include economic benefits such as increased earnings through the guaranteed minimum price, access to market, equipment and training in more efficient mining, processing, and handling techniques, as well as social benefits through the establishment of formal governance arrangements at sites, improvements in mine safety, mercury use, environmental stewardship, and community development as a result of the additional premiums paid that go towards local projects – all key parts of their Standards (FLO, 2013; ARM, 2014; DDI, 2016a, 2016b, 2016c). As a result of this work, these organisations have demonstrated proof of concept, developed a market in Europe for ethical jewellery, and helped bring to light the challenges facing these communities to a Western audience unaware of their plight and role in mineral supply chains, perhaps providing a catalyst for further improvements. However, despite creating a foundation there are very real concerns in the wider literature with the ability of these schemes to be truly transformative for the millions of impoverished mining communities operating informally throughout the sub-Saharan Africa.

Table 2.5 Aims, objectives and impact of flagship mineral certification schemes

	Development Diamond Initiative	Fairmined Gold	Fairtrade Gold
Marketing / Mission Statement	'The Diamond Development Initiative (DDI) is working to transform artisanal and small-scale mining (ASM) by bringing this largely unregulated informal sector into the formal economy in ways that benefit miners, their communities, regional and national economies, and the diamond and jewellery industry.'	'Fairmined is an assurance label that certifies gold from empowered responsible artisanal and small-scale mining organizations. It transforms mining into an active force for good, ensuring social development and environmental protection, providing everyone with a source of gold to be proud of.'	'Fairtrade gold and precious metals is a ground-breaking initiative that offers a lifeline to poor and exploited small-scale miners around the world. It links consumers of jewellery with the source of their purchase. It is this link through Fairtrade standards and certification that makes Fairtrade gold the best gold in the world.'
Objective of Standard	'These Standards complement existing protocols by extending and adapting them to the particular needs of the miners and their conditions. The <i>Maendeleo</i> Diamond Standards are also designed to build a bridge between this sector and existing responsible supply chains.'	'To promote the progressive organization and formalization of the ASM sector, bringing with it improved labour rights, safer working conditions for miners, and strengthened miners' organizations with the capacity to campaign for legislation and public policies that promote their rights and enable a responsible ASM sector.'	'To create opportunities for artisanal and small-scale miners and their communities, by promoting the formalization of the artisanal and small-scale mining (ASM) sector through establishing membership-based artisanal and small-scale mining organizations (ASMO).'
Impact	- DDI have helped register over 108,000 miners in DRC alone. - Over eight separate ASM development projects - Standards launched in April 2016 - 14 artisanal diamond mining sites located in Kono District, Sierra Leone are currently participating in MDS - Expansion of MDS to DRC in 2016, and West Africa 2016–2017 - Working with a small group of buyers, DDI expects first <i>Maendeleo</i> Diamond jewellery to be available in retail stores in 2017	- Eight organisations certified in four countries - Over 130 business in 21 countries working with Fairmined Gold - 20 mining organisations working towards certification - 80 mining organisations working towards better practices - 13,000 miners and families benefitted from ARM's interventions in 2016 - USD 1,500,000 paid in premiums to certified mining organisations since 2014 - April 2015 hosted workshop with local partners, miners and government agencies from Burkina Faso, Mali and Senegal to learn about Fairmined certification.	- Three organisations certified in three countries - Working with other ASMOs to reach certification (not clear how many or where) - Have previously worked with ASMOs in Bolivia, Colombia, and Peru - Long term vision to reach 5 per cent of the gold jewellery market over 15 years - From 2012 to 2015 through a pilot project funded by Comic Relief to extend benefits of Fairtrade Gold in East Africa worked with over 1,100 miners indirectly and directly in the pilot phase

Sources: ARM (2014; 2015; 2017); DDI (2016a; 2016b; 2017); Fairtrade Gold (2015); FLO (2013); Fairtrade Gold (2017).

Table 2.6 Details of selected certified mining cooperatives

Organisation	Cooperative	Location	Description
Alliance for Responsible Mining	15 DE AGOSTO	Bolivia	- Certified in September 2015 - 189 shareholders (50 women, 139 men) - 32 mine workers (1 woman, 31 men) - Hard rock mining - Community also farms and raises livestock
	YANI	Bolivia	- Established and licensed in 1983 - Certified in March 2017 - Hard rock mining - 85 shareholders (10 women, 75 men) - 60 mine workers (all men) - Four ball mills with can process 25 tons daily - 3 to 4 kilos of gold produced monthly with 93 per cent purity
	IQUIRA	Colombia	- Cooperative mining organisation established in 2004 - Certified in 2014 - Coffee growing community began seasonal mining in early 2000s - Underground hard-rock mining - 40 cooperative members (6 women, 34 men) - 52 hired workers (3 women, 49 men)
	COODMILLA	Colombia	- Established in 1977 and licenced in 1990 - Certified in 2016 - 1 certified cooperative, with 7 labour groups and 10 mines - 140 miners in total - Processing plant with gravimetric shaking tables
	LA FORTALEZA	Colombia	- Mine established in 1974 - Hard rock underground mining - 13 cooperative members (2 women, 11 men) 8 of which mine - Secured 4 million Colombian pesos bank loan in 2008 - Approached ARM in 2013 for support with certification
	CECOMIP	Peru	- Established cooperative in 2005 - Certified August 16th 2016 - Mining alluvial gold - 9 distinct cooperatives with 200 members (137 men, 63 women)
	MACDESA *	Peru	- Certified in 2015 - Hard rock mining - Includes mine with processing plant and laboratory - 329 partners (4 women, 325 men) - 91 mine workers (6 women, 85 men)
	XAMODX	Mongolia	- Certified January 2015 - First organisation certified Fairmined Ecological Gold - Hard rock mining - 130 NGO members (22 women, 108 men) - Previously herding communities, started mining in 2006 following consecutive years of harsh winters (<i>dzuds</i>)
Fairtrade	MACDESA *	Peru	- Certified in 2015 - Established in 2004 by group of 478 associates. - 200 miners, 550 families - Hard rock mining with cyanide leaching plant
	SAMA	Uganda	- First organisation certified in Africa - Registered in 2013 - Certified in 2016 after four years - 35 miners - Produces 5kg of gold per year
	MICODEPRO	Kenya	- Registered in 1999 - 31 members
DDI	Unknown	Sierra Leone	- 14 artisanal diamond mining sites located in Kono District, Sierra Leone are currently participating in MDS - Expansion of MDS to DRC in 2016, and West Africa 2016–2017

Sources: DDI (2016a; 2016b; 2017); ARM (2017); Fairtrade Africa (n.d.); Fairtrade Foundation (2016a); Hilson and McQuilken (2016); SBGA (2017). * Note: It is not clear in the documentation, but these are two separate groups working the same mine and certified either by ARM or FLO. A communication at a conference in 2016 also suggested this was the case and is supported in a recent publication by Fisher (2018) who provides further details on the mining cooperatives currently certified.

Proponents of ethical mineral certification argue that such schemes help to connect impoverished small-scale mine operators to Western jewellers, in the process removing 'unscrupulous middlemen' from supply chains; ensuring certified mining cooperatives receive fair payments and reliable access to markets, which in turn leads to improved incomes and living standards; and ensuring that production processes meet acceptable social and environmental standards (Maldar, 2011; World Gold Council, 2012; ARM, 2014c). In the case of sub-Saharan Africa, marginalised artisanal and small-scale miners, it is argued, face similar challenges to the region's small-scale subsistence farmers. These farmers, it is further pointed out, have seemingly benefitted greatly from fair trade certification and labelling initiatives since their inception in the late-1990s.

The concern here and point of departure for this thesis, however, is that despite the fanfare surrounding its launch, fair trade is a fundamentally *flawed* agenda, an issue that has received considerable attention in the literature. For some shrewd commentators, the evolution of the current fair trade network should not be viewed as a triumph, but rather, as a product of the failure of the original movement to sufficiently challenge neoliberal globalisation (Fridell, 2004; Marston, 2013). Described as 'a second-best proxy' that 'attempts to establish interim global market justice in a non-ideal world' (Walton, 2010, p. 431), by moving away from attempting to establish an alternative and parallel trading system working against the neoliberal market, fair trade must instead be seen as having become embedded in it. It is therefore simply seeking to 'correct' the global trade system from within. Arriving at a similar conclusion, Hudson et al. (2013, p. 183) elaborate on this point:

[By focusing on] consumption rather than the more difficult and rewarding arena of politics ... fair trade limits itself to operating as an alternative, more ethical choice for consumers, [that] will remain unable to deliver anything but limited benefits to a small subsection of the developing world population fortunate enough to be producing certified products.

But the criticisms extend beyond the framework itself. A wealth of studies draw attention to the limitations and negative aspects of fair trade. The exhaustive list includes the net effect of certification costs and compliance leading to lower than expected returns (Weber, 2011); elite capture and selective empowerment; a 'watering-down' of the standards due to stringent requirements precluding many producers from accessing certification; the adoption of standards by larger corporations and plantations, seen as countering the *raison d'être* of fair trade (Bezençon, 2011; Blackman and Rivera, 2011; Phillips, 2014); monitoring and enforcement challenges; a reliance on inputs from Western producers in supply chains and catalytic bodies such as the FLO (Renard, 2005); and a general overabundance of schemes on the market (Giovannucci, 2001; Giovannucci and Koekoek, 2003; Giovannucci and Ponte, 2005). Additional concerns include the growing complexity of certification markets, centralisation of regulation bodies, and a general imbalance of power relations between governments, cooperative leaders, and smallholders (Renard, 2005; Elder, et al., 2012). The concern here is that a flawed agenda with a portfolio comprised of low-value agricultural commodities has been adopted, wholesale, as a lens for addressing what, despite perhaps appearing to be similar scenarios on the surface, are, in fact, very different

situations in the ASM sector involving commodities that are highly valuable. Are ethical mineral certification schemes destined to follow a similar path? Will the schemes end up merely supporting an elite group of already-licensed miners who become reliant on a relatively small conscientious Western consumer base, whose incomes and spending patterns are, in turn, linked to the vagaries of global financial markets, trends in consumption, and their ability and willingness to pay more for ethical jewellery? If proponents of ethical mineral schemes are genuinely committed to engaging and supporting the poorest ASM operators, it would require targeting those trapped in the informal economy. This is why formalisation of, and the delivery of support for, ASM are seen here as largely inseparable: if the platform (the former) for delivering the assistance (the latter) does not exist, it must first be established, or the scheme will take on a very different character. Given the context in question, delivering on objectives would require *adapting* schemes and standards, which in this case would require assisting operators with formalisation. Are the designers of ethical minerals schemes doing this, or expressed a willingness to do so?

The results thus far are not particularly encouraging. It points to the organisations behind ethical mineral schemes *not* being the catalysts of change for the poor in the ways in which in the rhetoric suggests. Reflecting on developments with both *Fairmined* and *Fairtrade* gold, commentators have voiced very real concerns about elite capture and selective empowerment already having taken place at chosen pilot sites and in recently-certified ASM communities in sub-Saharan Africa. Childs (2008), providing one of the first analyses of the original Fairtrade and Fairmined Gold Standard, drawing on fieldwork in Tanzania, highlighted the role fair trade can have in changing negative views around the ASM sector. The author suggests that through these standards, 'rather than the negative discourse of criminality...small-scale miners are ... re-imagined as...positive figure[s] and are promised rightful access to the policy-making process through a resituated discourse of ASM as a viable livelihood strategy' p. 134). But while there is little disputing this point, Childs (2008) fails to fully recognise that unlike the much-needed formalisation, a reoriented rhetoric and reimagining amongst consumers and fair trade activists already 'converted' by the *Church of Fairtrade*¹² is unlikely to transform the lives of the millions of impoverished small-scale miners across sub-Saharan Africa. The author would later recognise, with the benefit of hindsight, this oversight, concluding that 'Fairtrade needs to go beyond only increased recognition of ASM, to ensure more just outcomes for miners' (Childs, 2014, p. 1).

Complementary research (Hilson, 2008; 2014; Childs, 2008; 2010; 2014; McQuilken, 2016; Hilson and McQuilken, 2016; Hilson et al., 2016; Fisher, 2018) has reinforced this point as well as additional concerns. Implementing bodies have shown little interest in adapting criteria to the specific context in question, which would require tackling some of the problems highlighted in Section 2.2.1, if, indeed, the region's most impoverished ASM operators are being targeted. Failure to do so has resulted in 'elite capture' and selective empowerment, mirroring many of the developments that have emerged in the fair

¹² Both the Anglican and Catholic Churches have been a key ally in helping to market the Fairtrade Foundation's brand and products since its inception, and is also central to their 'I Do' campaign which aims to encourage UK brides and grooms to buy Fairtrade gold wedding rings (Fairtrade Foundation, 2014; 2015b).

trade agro 'space'. Specifically, and despite claims that they are working to connect to operators who are marginalised and poor, implementing bodies are targeting 'the low-hanging fruit' (Bezençon, 2011; Hilson et al., 2016; Hilson and McQuilken, 2016; McQuilken, 2016). Perhaps it is a case of not wanting to challenge host governments, the complexities that must be unravelled in the informal economy, or a combination of the two. The task of connecting with the neediest ASM operators in sub-Saharan Africa promises to be daunting. As several studies have pointed out (Reno, 1997; Grant, 2005; Hilson, 2014; McQuilken and Hilson, 2018), the high-value of commodities involved – precious minerals – are, in these informal spaces, at the heart of complex, multi-layered, clandestine networks of production and social and economic activity that are often difficult to penetrate and may also be associated with criminality, illegality, embezzlement, corruption and civil violence. An unwillingness to navigate these complexities has resulted in the 'selective empowerment' witnessed thus far in the sector, a problem which, as Bezençon (2011, p. 66) explains, is now 'a general concern about fair trade' – that it can be exclusionary because of 'its propensity to generate elite producers...or its inability to integrate many producers'. There is evidence of this selective empowerment taking place in Latin America, where the original FFGS was implemented, and East Africa where the UK arm of FLO, the Fairtrade Foundation, have been piloting their initiatives in Kenya, Tanzania, and Uganda (Childs, 2014a; 2014b; Hilson, 2014; Hilson and McQuilken, 2016).

An unwillingness to help miners formalise seems counter-intuitive to the underlying objective of ethical mineral schemes. Significantly, officials at both Fairtrade and the Alliance for Responsible Mining (ARM), the organisation which conceived the *Fairmined* standard, have made it very clear that they are only willing to work with *registered* operators. Even from the start, the criteria for selecting pilot organisations of the original joint standard was that they 'be legally registered and organized, or be affiliated to a registered organization' (Echavarria, 2008, p. 5). This approach has since been embedded within the legal documents of both standards which, as a pre-requisite for entry to the certification system referred to as 'Year 0' and as part of the 'core requirements', necessitate a variety of obligations beginning with the need to be a legally registered and recognised membership-based artisanal and small-scale mining organisation (ASMO), holding the necessary permits to mine, and being compliant with existent tax regimes and environmental conditions:

An ASMO has direct (held by the ASMO) or indirect (held by miners of the ASMO) legal or contractual rights and environmental permits to mine (ARM, 2014, p. 7).

The ASMO or its miners must possess or be granted land-rights and mining rights for all areas included in its Fairmined System of Production (ARM, 2014, p. 22).

Pay taxes, fees, royalties and other tributes to the relevant authorities, as required by the applicable legislation (Fairtrade International, 2013, p. 9).

All transactions are fully traceable and are subject to full compliance to physical traceability requirements for Fairtrade precious metal destined for labelled product (Fairtrade International, 2013, p. 17).

Mining operations and processing plants comply with national environmental laws and have valid environmental licences, permits or management plans according to national legal requirements (Fairtrade International, 2013, p. 34).

These schemes, therefore, have emerged *not* because of collective agreement on the need to empower poor miners and to catalyse change in their lives but rather in response to demands for minerals which can be tracked to the source. The conscious decision made by implementation bodies to work *within* existing trade and policy structures has transformed flagship ethical mineral schemes such as *Fairtrade Gold* and *Fairmined Gold* into traceability and transparency exercises which, despite the rhetoric that suggests otherwise, have little to do with empowering poor masses. Instead, the ongoing certification process appears to connect established producers to Western markets, branding these efforts as 'Fair' or 'Ethical'. As Hilson and McQuilken (2016) explain, this seems to have been the approach taken from the beginning in Latin America, where these standards originated. Here, many 'certified' operations were already licensed and formalised before FLO and ARM arrived on to the scene, some for several decades prior to becoming certified. They feature highly mechanised and advanced operations such as fully recoverable closed-loop cyanide leaching plants, and in some cases, even employ consultant engineers. For example, the YANI cooperative in Bolivia, which became Fairmined certified in March 2017, was already well-established having been set up in 1983, operates four ball mills that can crush and process 25 tonnes of hard rock daily, and employs 60 miners to help produce three to four kilograms of gold at 93 per cent purity per month (ARM, 2017). This is a far cry from the operations found in the informal 'spaces' across sub-Saharan Africa.

Is it a case of implementation bodies, their perspectives and expectations shaped by their experiences in Latin America, having a different view of what constitutes 'fair' or 'ethical'? This seems plausible when accounts in the literature (Banchirigah, 2008; Grätz, 2009; Clifford, 2010) are considered: when compared to the vast majority of operators in sub-Saharan Africa, the small-scale miners found in Latin America, whose activities again, largely informed the design of many ethical mineral standards and schemes, are advanced, relatively affluent and licensed. This point resonates powerfully with a recent independent review of FLO's *Extending Fairtrade Gold to Africa Project*, raising the question of how replicable, transferable and scalable these standards are for implementation in the region. Through their in-depth evaluation, the authors explain that the effectiveness of the project has been slowed due to assumptions that ASM activities in Latin America are the same as those in sub-Saharan Africa, despite having very different socio-political histories and cultures. This is in spite of an expansive ASM literature capturing the extreme heterogeneity and context specific nature of the operations at local and global scales (Cleary, 1990; Zack-Williams, 1995; Fisher, 2007; Clifford, 2011; Hilson and McQuilken, 2014; Verbrugge, 2014, 2017; Ferring et al., 2016). Clearly, the implementation bodies behind these schemes, in

particular, the FLO, have underestimated the task at hand and lack detailed knowledge and understanding of the local functioning of ASM communities:

Overall, progress has been slower than expected because the expectations for this project were based on experiences in Latin America and the assumption that in East Africa conditions would be similar, which is not the case: small-scale gold mining in East Africa is more informal and unorganised, within a wider institutional context that has severe resource and capacity constraints (Kessler, et al., 2015, p. iii).

This point on misdiagnosis and misunderstanding of the sector is further illustrated by the apparent focus on so-called ‘unscrupulous middlemen’ in ASM networks. They are singled out by FLO and other certification initiatives as being responsible for the poor market rates miners receive for their gold. However, while this may be the case in certain geographies, a growing body of literature is showing the complex relationships between miners and middlemen whom, in the absence of formal financial institutions and micro-credit schemes willing to lend to both informal and even licensed small-scale miners, provide loans to sponsor activities, facilitate access to markets, and provide opportunities to forge long-term mutually beneficial relationships in complex supply chains of production and labour hierarchies (Hilson and McQuilken, 2016; Fold et al., 2013; Verbrugge et al., 2014). Kessler et al., (2015) highlight the relationship between miners and middlemen, drawing on experiences from the East Africa project, reporting that ‘The project has so far not been able to develop an adequate response to the need for pre-financing for the ASMOs (removing a function currently provided by local gold buyers)’ (p. iv).

The difficulties FLO has faced with implementing project work in East Africa and ability to scale up to other countries in the region will remain limited unless a concerted effort is made to better understand the complex relationships that have become embedded within ASM communities over many decades. An additional challenge in terms of the transferability and scalability of ethical mineral schemes and standards is further illustrated by small numbers of miners that have received certification under FLO’s East Africa project. Of the 1,100 miners FLO claim to have directly or indirectly worked with and the nine ASM organisations listed as the beneficiaries of the pilot, five of which were registered prior to 2013 when project activities started and comprise a meagre 345 members in total, just two mines became certified after three years: 1) The Syanynonja Artisan Miners Alliance (SAMA) in Uganda that was registered in 2013 and has 35 members; and 2) the Micodepro Development Group (MICODEPRO) in Kenya, which first registered in 1999 and has 31 members. Compared with the 150,000 small-scale miners estimated to be working in Uganda, and the 100,000 in Kenya, these figures show the significant task at hand if either of the standards are to have a transformative development impact in the region. Furthermore, there is limited information with regard to progress made by ARM in the region to date, other than regional workshops to promote their Fairmined Gold initiatives in Burkina Faso, Mali, and Senegal (ARM, 2015; see Table 2.5). Likewise, given that their standards were only formally launched in 2016, the DDI has so far focused their MDS certification efforts in 14 artisanal and small-scale diamond mining communities in Sierra Leone with whom they have been working very closely on other

community development projects for over a decade; demonstrating the length of time needed to understand the dynamics on the ground before even piloting their standards.

Similarly, the geographical locations of the East Africa pilot also bring into question concerns over their transferability not just from Latin America to sub-Saharan Africa but also to other regions on the continent. Aside from Tanzania, which has a sizeable ASM workforce comprising approximately 1,500,000 miners (Table 2.1) though is yet to have a Fairtrade certified organisation, the numbers of people engaged in ASM in Kenya and Uganda are far smaller and mining activities less historically entrenched when compared to other countries on the continent. Ghana, for example, has a long and complex history of large scale mining having formerly been known as the Gold Coast in colonial times, and, an artisanal and small-scale mining sector that is deeply entrenched in the informal economy supporting over one million people directly. It is therefore unlikely, based on the limited success in East Africa, that these schemes can be successfully extended to different parts of Africa with far greater numbers of small-scale miners and deeper structural challenges to formalisation. Thus, while it is important to demonstrate proof-of-concept, the approach taken of working with relatively small, readily certifiable groups suggests, again, only the low-hanging fruit appear to be being targeted and as a result the ability of these certification schemes to reach large numbers of impoverished, informal miners could remain limited.

Concerns over scalability also relate to the long-term sustainability of these initiatives due to their reliance on Western markets and ethical consumption. At present the three schemes under review are geared towards supplying the ethical jewellery market, with FLO's (very) long-term vision to reach five per cent of the gold jewellery market over 15 years (Table 2.5). However, as the proliferation of mineral certification schemes outlined at the start of this section demonstrates, there is no requirement for sustainable and ethically sourced minerals to come from ASM (Blackmore et al., 2013). Hilson (2014, p. 56) sums this point up well, explaining that in the:

absence of detailed information about the organization of precious metals and gemstone production, programmes which target minerals have evolved in a policy vacuum. With no internationally recognized standards and guidance, a wide range of definitions of 'fair' have gestated and certification schemes have developed relatively autonomously [sic].

The result is that the many other mineral certification schemes that occupy the same space (i.e. those listed in Table 2.4) could likely meet the demand for ethical jewellery through certified trading chains with large scale mines – as opposed to artisanal and small-scale mines – far more easily and at far lower transactional costs. If consumers and the jewellery industry are solely concerned with traceable, transparent, and conflict-free supply chains to meet corporate social responsibility targets and reach the ethical jewellery market, there is little incentive to engage with and source from small-scale operations (Blackmore, et al., 2013). The challenge to develop and sustain a market for certified gold, sourced from ASM operators or otherwise, has also been highlighted by a collection of recent studies which reported

that many retailers were dis-incentivised from promoting ethical jewellery due to the impact it may have in undermining the ethical credentials of their other products, while consumers were either unaware of certified ethical alternatives, trusted jewellers to 'do the right thing', or did not consider the ethical credentials of great importance due to jewellery being a luxury infrequent purchase (Moraes et al., 2015; Carrigan et al., 2015; Carrigan et al., 2017).

These challenges to developing the ethical jewellery market highlight more fundamental flaws in the business model of these schemes, and their reliance on Western consumers, while perhaps also signalling a limited understanding of the complex jewellery supply chains from mine to market. It may also help explain why both ARM and FLO have sought seemingly increasingly desperate measures to create a market for certified gold from artisanal and small-scale miners, by launching high profile marketing campaigns in Europe and forming partnerships with glitzy, international award ceremonies and multinational companies.¹³ Having previously worked solely with boutique artisan jewellers, a case in point, are the recent efforts made by the Fairtrade Foundation to reach a wider audience. Through partnership with Argos, one of the UK's leading home retail giants,¹⁴ 'British couples' now have the option to purchase a 2 mm, 9 carat Fairtrade Gold certified wedding ring for the entry-level¹⁵ price of GBP 99.99:

As one of the biggest high street retailers of jewellery, this move shows that Fairtrade gold really can be mainstream. By selling affordable, responsibly sourced wedding bands to customers nationwide, Argos is offering more choice plus the assurance that the gold is 'clean', free from child labour, pollution and exploitation (Fairtrade Foundation, 2016b).

However, the need to develop the market for, and mainstream, certified gold, further distracts and draws resources away from the more pressing need to address the underlying issue of informality and bring operators into the legal sphere, before they are even able to access certification schemes. Furthermore, the issue of mainstreaming has caused splits in the fair trade network before as it has had to reconcile partnering with multinational companies such as Walmart, Starbucks, and Nestlé, lesser known for their ethical credentials, in order to increase the market for fair trade products and support more producers while also ensuring it does not undermine the original vision that aims to empower small-scale producers in developing countries (Raynolds, 2007; Mohan, 2010; Goodman, 2010; Hudson, et al., 2013; Baby Milk Action, 2015; Nestlé, 2015). Indeed, there are already signs that the fair trade mineral certification initiatives under investigation appear to be following a similar path, with the issue of mass-balancing¹⁶

¹³ In May 2014, the coveted 'Palme D'Or' awarded for best film at the exclusive Cannes Film Festival was handcrafted using certified Fairmined Gold by the luxury Swiss watch and jewellery firm Chopard. And, since Livia Firth, husband of acclaimed actor Colin Firth, walked down the red carpet at the 2011 Oscars wearing Fairtrade and Fairmined certified jewellery, a number of other celebrities have been adorned with high-end 'ethical' jewellery at prestigious award ceremonies worldwide, from the Golden Globes to Venice Film Festival (The Jewellery Editor, 2011; 2014a, 2013b; Schein, 2014).

¹⁴ In the 2015 financial year Argos achieved sales of GBP 4,096 million (a one per cent growth on the previous year) and its parent company Home Retail Group, of which Argos comprised 72 per cent of sales, was ranked 11th in the UK for sales (Home Retail Group, 2015; Retail Week, 2016).

¹⁵ The Fairtrade Gold ring is over three times more expensive than an equivalent 2 mm, 9 carat gold ring that was on sale from the online Argos catalogue for GBP 29.99 at the same time in July 2016 (Argos, 2016).

¹⁶ Mass balancing refers to the mixing or diluting of certified Fairtrade and/or Fairmined gold with uncertified gold in order to help ensure a market for the former. Once mass balanced, products cannot use the logo of either certification schemes and there are restrictions on how they can be marketed and sold (Fairtrade International, 2013; ARM, 2014; McQuilken, 2016).

having caused significant difficulties and potentially undermining the future of both ARM's and FLO's initiatives (Oakley, 2015; McQuilken 2016; Fisher, 2018).

There is therefore a significant question mark hanging over where fair trade mineral certification schemes may go next, who stands to benefit (and to what extent), and what form of 'fair' they may take. Furthermore, what impact will partnerships with the likes of Argos and other high-end jewellery brands have on the ability of the initiatives to affect real change in policy and practice to address the issue of informality? As the organisations at the helm of these initiatives grapple with trying to mainstream their ethical gold, it appears likely that it will further reduce their ability to work with groups of largely informal operators, who have already been overlooked by many of the standards, and lack the support, skills and equipment needed to produce regular quantities of gold under 'ethical' and 'fair' conditions.

A final point in this analysis of the current status of ethical mineral schemes in sub-Saharan Africa is a broader concern that few, if any, of these three schemes are able, and in some cases seemingly unwilling, to address the more fundamental barriers to formalisation. A point that the Fairtrade Foundation (2015, p. 17) is clearly well aware of:

While Fairtrade certification is one approach to addressing the challenges of ASM, there is also an urgent need to engage governments and call for greater support and formalisation of the ASM sector. By introducing appropriate legislation that is tailored to the needs of artisanal and small-scale miners, and implementing public policy and programmes for ASM, they will no longer be forced to operate illegally. Governments in nations where ASM commonly occurs can also help miners' groups to secure mining titles so that the potential of this sector can be fully harnessed to support long term development goals. By so doing governments will be taking advantage of the opportunity that responsible ASM presents to reduce poverty in the developing world.

The failure of these ethical mineral certification initiatives to fully take stock of and address the underlying structural barriers to formalising the sector, has led one group of authors through an in-depth review that considers 14 separate initiatives to proclaim that the 'ethical mineral schemes and standards being piloted/implemented are not development interventions, as is often believed' (Hilson et al., 2016, p. 1). What then can be done to extend the reach of these certification initiatives to informal artisanal and small-scale miners and contribute more fully to formalising the sector?

As the analysis has shown so far, there is a clear need for greater understanding on behalf of the fair trade schemes regarding the functioning of ASM at the local level and the roles of middlemen. Better information of which could help immeasurably with their design and approach, as well as aid in telling richer and more detailed stories for consumers to help improve the market for ethical jewellery. Moreover, the wider ASM literature and the few policy initiatives that do exist have repeatedly identified the need for greater understanding and detailed information regarding the local dynamics of ASM production in order to design more bottom-up formalisation initiatives that can aid a transition to the

legal sphere, while providing accessible support services to mitigate the negative impacts of activities (Davidson, 1993; Hilson and Maponga, 2004; Hilson, 2007; AU, 2009; Hilson, 2016b; Mutemeri et al., 2016; DELVE, 2018). For example, in their analysis of intertwining formal and informal ASM supply chains in Ghana and Tanzania, Fold et al., (2014, p. 138) point to the need for:

future research to map out and understand the multifaceted ways that actors (particularly in the production node) are locked-in by informal institutional arrangements ... Specifically, knowledge on how 'labour markets' are interlocked with product markets, i.e. how miners are paid by employers (pit holders and/or licence owners), by which means they are paid (ore, cash, or others) and how they make a living between the 'pay-rounds' (for instance through provision of subsistence or credit from the employer).

Thus, aside from a collection of recently-published scholarly works (Fisher, 2007; Banchirigah, 2008; Van Bockstael, 2014; Verbrugge, 2015) which demonstrate that contemporary ASM economies are comprised of highly-organised and interlocking livelihood activities, are populated by an array of actors, feature complex labour hierarchies and feed equally complex and dynamic global supply chains and networks, there is still need for a more detailed understanding of their local functioning. The challenge now is to better understand the dynamics of operations and how to transition the sector to a legal sphere where miners and ultimately the industry can be supported in order to realise the significant potential of ASM to socio-economic development outlined thus far. A gap in knowledge this thesis is poised to help address.

For ethical mineral schemes to truly deliver on their objectives and to empower ASM operators who are in need of the greatest assistance, designers and implementation bodies must therefore connect with the informal 'spaces' where these individuals are found. They must commit to understanding the nuances of these complex 'spaces' with a view toward gathering the information needed to establish a platform for formalisation and ultimately, to launch effective pro-poor ethical mineral schemes. Such 'Regularization of artisanal miners', World Bank officials explain, 'is a necessary process in the early stages of engagement because it provides a legal framework to deal with ASM and opens the way to formalization' (World Bank, 2009, p. 22). Recognising that the 'implementation of technical 'solutions' always require detailed knowledge of the cultural, social, economic and organisational context of the miners' (Hentschel et al., 2002, p. 38), the next section of the chapter introduces the Global Production Network (GPN), a framework which is used here to map and understand the dynamics of the sector's informality. As 'the differences between mining operations and local contexts' means that 'a single generic technical solution is normally inappropriate' (Hentschel et al., 2003, p. 21), it is imperative that the organisations managing and implementing ethical mineral schemes capture the fine details of the populations they are targeting and use this information to modify standards accordingly.

2.3 Conceptual framework and theoretical foundation: The Global Production Network as a tool to reconceptualise the dynamics of informality

One tool that has significant potential in revealing the complex functioning of ASM supply chains is through the lens of the Global Production Network (GPN). It was developed as a conceptual framework to map and analyse the interconnections of production and consumption processes as they relate to economic globalisation (Henderson et al., 2002). By definition a global production network is a complex: 'organisational arrangement comprising interconnected economic and noneconomic actors coordinated by a global lead firm and producing goods or services across multiple geographic locations for worldwide markets' (Yeung and Coe, 2014, p.4).

2.3.1 Introduction

The GPN framework originates from a broader theoretical landscape described by Bernstein and Campling (2006a, p. 240) as 'commodity studies' from which many of the chain-of-custody type and ethical mineral certification initiatives appear to have taken considerable inspiration. Both ARM and FLO present a range of linear, unidirectional supply chain diagrams in their documentation, describing ASM operators as being confined to 'unfair supply chains' and using chain language to ground their 'theories of change' in line with the broader fair trade movement (Fairtrade Foundation, 2015, p. 9). Yet, despite the ready application of such concepts and use of the supply chain as the unit of analysis, in the academic literature there has been little theoretical advancement and only limited application of the commodity studies, supply chain and global production network concepts to the extractive industries (Wahl and Bull, 2014). Furthermore, with a significant portion of this literature being grounded in business and management studies and having been applied primarily to explore agricultural and manufacturing sectors, much of the resulting value chain, market system, and global production network analyses tend to focus on firm level activities and have been criticised for failing to sufficiently account for the labour processes at the base of production, as well as the needs, constraints and priorities of informal workers – such as those working in ASM (Chan, 2013). Thus: how is the use of the broad commodity studies literature affecting the design of mineral certification initiatives? Are the theories and analytical lenses being used accurately conceptualising the challenges facing ASM operators, and, how can the GPN be adapted and advanced to more accurately capture the local dynamics of ASM activities and as a result be used to inform and design more effective certification and formalisation initiatives that are better connected to reality?

This section of the literature review introduces the GPN in greater detail, exploring its potential utility as a framework for mapping informal ASM activities and making sense of the relationships forged between its key constituents and the many nuances of the quasi-informal space it occupies. Through a critical analysis, the GPN framework is adapted for mapping the complex informal networks of ASM production with a focus on the horizontal. As part of the reconceptualisation of the framework, the section also

outlines the theoretical framework of this thesis, which centres around the notions of empowerment, value, and embeddedness that are the three adapted analytical categories the GPN mobilises.

By taking a network approach the GPN framework challenges the linear and structurally focused value chain conceptualisations of production and consumption. Instead, it more accurately conceptualises, and reveals, highly complex networks with intricate horizontal, vertical and diagonal linkages that form multi-dimensional and multi-layered lattices of economic activity and are influenced by the key dimensions of value, power and embeddedness (Henderson et al., 2002). This conceptualisation is in contrast to the unidirectional linear value and supply chain approaches that have been applied to ASM and the extractive industries to date, which provide little detailed information of the socio-economic functioning at key nodes, and at the local level (e.g. Mutemeri and Samba, 2010; Da Silva-Glasgow, 2013; Human Rights Watch, 2015). Central to all GPN mapping is the need to capture qualitative data on embeddedness (the geographical, socio-political and historical structures and context that actors are situated within), power (over, to, with and within and dimensions of empowerment), and value (creation, retention and enhancement of). By focusing on these key elements, the framework enables the uneven developmental consequences that are the constant of globalised markets and the dynamics of production and consumption to be revealed. Indeed, conceptualising those engaged in ASM production as being embedded within highly complex network structures with intricate multi-directional and multi-dimensional lattices of economic activity fits more accurately with the characteristics of ASM activities outlined at the start of this chapter.

In addition, by focusing on embeddedness, power, and value the GPN framework enables an examination of key underlying socio-economic theories that, as the next section outlines, are fundamental components to ensuring the development of communities and vital parts of any successful certification or formalisation initiative. This section therefore forms the conceptual framework and theoretical foundation of the thesis. It weaves together the interrelated concepts of embeddedness, empowerment, and value as they relate to ASM and informal socio-economic activities in African societies, and deepens the links in the literature to sociological theories of trust, labour, and value creation in order to develop a more theoretically grounded and applicable analytical framework adapted from the original GPN with which to map and analyse, in detail, artisanal and small-scale mining production activities in the latter part of the thesis. The resulting analytical framework is termed here as a *social production network* given its emphasis on social relations in the production of minerals on an artisanal and small-scale. Finally, it is argued in this section, that by using the adapted GPN framework to comprehensively map the interlinkages between the informal and formal networks, it will also enable an assessment of how, and whether, the point of interaction with ASM production that the different mineral schemes propose, and the schemes themselves offer, are viable development strategies.

2.3.2 A critical overview of GPN scholarship¹⁷

Although never used as a 'lens' to retrieve information about the anatomy and organisational complexities of a largely-informal sector such as ASM, the GPN is recognised as a dynamic framework that can assist immeasurably with uncovering the intricate details of comprehensive networks. Moreover, as Hughes et al. (2008, p. 348) explain, the GPN 'prioritize[s] social processes and interaction[s] between agents comprising [these] network dynamics', a detailed knowledge of which could help broaden understanding of how and why industries such as ASM proliferate in informal 'spaces'. Strangely, although the GPN framework has been praised for its ability to facilitate the collection of information across and at all levels of a nexus, to date, its application has been rather conservative. It has been used mostly to retrace and capture additional data about supply chains that are vertically-integrated and/or for which there is already an abundance of information available. But while empirical research on the GPN may not yet have lived up to the hype surrounding its utility, as a tool for understanding and analysing the dynamics of complex and largely-informal industries such as ASM, its value could be enormous. This section, which was recently accepted for publication (McQuilken and Hilson, 2018) begins by critiquing the GPN, as well as further discussing its potential utility as a framework for mapping informal ASM activities and making sense of the relationships forged between its key constituents.

Although a detailed history of commodity chain scholarship is beyond the scope of this thesis, some coverage of its antecedents is necessary, as it is from this broad body of 'commodity studies' described by Bernstein and Campling (2006a, p. 240) as having 'no common purpose, object of analysis, theoretical framework or methodological approach', that the GPN draws its inspiration and theoretical underpinnings. Key chain concepts (in chronological order) include the French *filière* approach (Raikes et al., 2000) value chains (Porter, 1985), global value chains / global commodity chains (Gereffi, 1994; Gibbon and Ponte, 2005) and global production networks (Henderson, et al., 2002). A logical starting point is the work of Gereffi (1994, 1999, 2005), who is credited with having initially advanced Hopkins and Wallerstein's (1986) pioneering analysis of 'commodity chains' (Gereffi et al., 2005; Bernstein and Campling, 2006a; 2006b). The author very importantly drew attention to 'the commercial dynamics between firms in different segments of the production chain' at a time when the investment presence of multinational corporations was becoming very visible across the developing world. The author's seminal Global Value Chain (GVC) framework continues to have enormous application today, as does his useful typology of producer-driven and buyer-driven chains. The limitations of the GVC framework in explaining the dynamics of a globalising world, however, sparked the launch of the GPN. This 'broad relational framework', its champions – principally, those closely associated with the so-called 'Manchester school' of economic geographers (Yeung and Coe, 2014) – contest, 'go[es] beyond the very valuable but, in practice, more restricted, global commodity chain (GCC) and global value chain (GVC) formulations' (Coe et al., 2008, p. 272) by 'captur[ing] the multi-stranded connections between producers, traders, retailers and consumers' (Hughes et al., 2008, p. 4). The GPN's chief distinguishing attribute is an emphasis on

¹⁷ This section of the chapter has been used to form the basis of: McQuilken, J. and Hilson, G. (2018) 'Mapping' Small-Scale Mineral Production Networks: The Case of Alluvial Diamonds in Ghana.' *Development and Change, Forthcoming*

horizontal relationships, or 'the institutional environment and agents not directly involved in production or commercialization [who] might play a key role in setting the conditions for production and trade' (Muradian et al., 2011, p. 270). Coe et al., (2008, p. 274–275) shed greater light on the importance of taking into account these horizontal relationships in commodity chain analysis:

In a production network, whose 'purpose' is to create value through the transformation of material and non-material inputs into demanded goods and services, there is inevitably an element of linearity or verticality in the structure of its nodes and links...This captures the process of sequential transformation from inputs, through stages of transformation to outputs and through to distribution and final consumption, a sequence in which each stage adds value to the process of production of goods or services. It is the set of processes that is conventionally involved in supply chain analysis...However, focusing only on the linear/vertical dimension of a production network is undoubtedly a problem...Such multi-dimensionality must be incorporated in any analysis of production networks without, at the same time, losing sight of the directed nature of the processes involved.

After collating details contained in the literature which cast light on the organisational structures of the ASM economies that have proliferated in informal 'spaces' across the developing world (e.g. Banchirigah, 2008; Fisher, 2007; Verbrugge, 2015), it becomes very clear that operators' relationships with major actors who are 'not directly involved in production or commercialization', including landowners, traditional leaders and particular sponsors, are indeed shaping the commodity chains they are a part of. Proponents of the GPN framework would argue that 'such relationships determine how much value is created, enhanced, and captured at each node' (Murphy, 2012, p. 210).

Can this 'broad relational framework', however, assist with the collection of the hitherto elusive details of the informal industries now entrenched across the developing world, including dynamic sectors such as ASM? Certainly, the impetus behind the GPN's skilful promotion as a framework capable of facilitating a more nuanced understanding of globalising industries and the increasingly-complex networks they have become a part of in an interconnected world would suggest this to be the case. A common feature of the main industries examined in the GPN literature to date is that a large share of their production takes place in developing countries. But at the same time, this burgeoning body of critique contains limited – and, when considering the hype surrounding the framework's utility, disappointing – analysis of this production. It draws sweeping conclusions from a very limited pool of findings, retrieved mostly from top-down analysis of supply chains linked to selected apparel, foodstuffs, flowers and electronics (e.g. Barrientos, 2013; Brooks, 2013; Raj-Reichert, 2013), and for which substantial information about 'sourcing' already exists.

There is even less analysis on the role played by the informal economy in GPNs, an omission which few scholars other than Phillips (2011) have comprehensively acknowledged. This is significant because, as is pointed out by the author, 'informalization has been seen as particularly pronounced in parts of the world

that might be described as “emerging” or “developing”, at least in terms of the numbers of people it encompasses’ (p. 381). Perhaps it is a case of the main industries profiled in the GPN literature not lending themselves to such an investigation. Nevertheless, in other contexts where sizeable informal industries such as ASM intersect, or in many cases, feed, global supply chains, this is a major oversight. Additional critiques have also made explicit calls for GPN studies to place a greater emphasis on examining the role of workers, their rights and exploitation (Plank et al., 2009; Phillips et al., 2011); take a ‘bottom-up’ approach rooted in the analyses of labour processes and agency (Selwyn, 2013; Carswell and De Neve, 2013); utilise a more nuanced conceptualisation of power (Brooks, 2013); and explore the process of social upgrading for workers in terms of tangible benefits (pay, working conditions, welfare benefits) as well as the surrounding enabling environment (Barrientos et al., 2011).

Despite claims made to the contrary by Coe and Hess (2013), under the direction of the ‘Manchester school’, the GPN literature has become overly-preoccupied with further discrediting the GVC (Coe et al., 2008; Yeung and Coe, 2014); expended considerable energy re-conceptualising, revisiting and repackaging the same ideas, mostly through self-citation; and spent more time producing glossaries and typologies of this ‘broad relational framework’ – two examples being ‘GPN 2.0’ (Yeung and Coe, 2014) and ‘Global Production Networks A–Z’ (Coe, 2011) – than actually enriching a limited empirical foundation. The former is particularly perplexing: is it productive and even appropriate to condemn the GVC for ‘not doing enough’ more than two decades after its inception, and at a time when globalisation has taken on many different and unpredictable dimensions? It is more inexplicable when considering that even Gereffi (2005, p. 170), recognising the limitations of the initial GVC in a rapidly-globalising world, minted a new typology in an effort to modernise the framework. The author has furthermore long acknowledged the utility of the GPN, particularly its ability to capture the fine details of governance and institutional structures, and has called for dialogue to be initiated between its chief proponents and scholars promoting the GVC framework. Going on to accurately observe that: ‘They do not cite one another’s research or engage in collaborative projects, despite the fact that both are concerned with the international forces shaping countries and firms in the global economy’.

Ironically, the GPN’s most significant contribution could be as a framework for assisting with the mapping of industrial networks its champions seem to be avoiding. Heading the list is the extractive industries, which, as Bridge (2008, p. 389) pointed out nearly a decade ago, ‘have not been central to the Global Commodity Chain (GCC), Global Value Chain (GVC) or Global Production Network (GPN) intellectual projects’. In fact, since Bridge’s (2008) comprehensive analysis of the global oil economy, only a small collection of GPN studies on extractives – Dicken’s (2011) description of the oil and copper sectors, Radhuber’s (2015) conceptualisation of flows in mining and hydrocarbon extraction, and Dos Santos and Milanez’s (2015) very informative analysis of iron ore production in Brazil – have emerged. This is a surprising development, given the highly internationalised state of mining, and oil and gas production and their networks, which make them ideal cases for a priori investigation. What is unsurprising, however, is that no attempt has been made to apply the GPN framework to ASM. The issue is, once again,

the lack of analysis in the literature about the importance of the informal economy in global networks, and very little commitment by researchers to retrieve such information (after Phillips, 2011).

Despite suggestions that the latest iteration of the GVC remains ‘a set of ideal-types based upon quite a narrow (deliberately so) view of production networks’ (Coe et al., 2008, p. 275–276), both it and the way in which the GPN framework have been projected are equally restrictive in their focus, fixated mostly on firm and sector-level activities. The rhetoric of the ‘Manchester school’ suggests, once again, that proponents of the GPN recognise this, the most recent indication being calls for ‘GPN 2.0’ to encapsulate a move away from generalisations at the ‘sectoral level’ towards an ‘actor-centered’ perspective (Yeung and Coe, 2014). But despite such bold assertions, the designers seem unable to move beyond the idea of networks revolving around a lead firm, so much so that in their re-conceptualisation of ‘GPN 2.0’, they define a GPN as ‘an organizational arrangement comprising interconnected economic and noneconomic actors coordinated by a global lead firm and producing goods or services across multiple geographic locations for worldwide markets’ (Yeung and Coe, 2014, p. 32).

Adopting this approach in the extractive industries, however, would undoubtedly result in the exclusion of a substantial share of activities: while in the four aforementioned studies, each of which focuses on large scale production, there are lead firms, for ASM, there are no dominant players among the many millions of operators scattered across the developing world. Moreover, and reinforcing Phillips’ (2011) claim that ‘The structural integration of informality in GPNs, and the blending of informality and formality, is easily grasped by exploring the dynamics of the global productive economy’, a considerable share of global mineral output originates from a mixture of informal and licensed (or semi-formal) ASM activities. Building on points raised by Phillips (2011), the adaptation and analyses that follow mark the first attempt made to apply the GPN framework to ASM, despite being perhaps the oldest, and most embedded, example of a truly global production network as miners have fed global networks of gold and diamond production for many centuries (Cleveland, 2014; Hilson, 2006). As Dicken (2011, p. 243) neatly surmises: ‘In a very real sense, the extractive industries represent the ‘beginning of the beginning’: the initial stage in the basic production circuit and in the web of global production networks that make up the global economy.’

The discussion that follows in the latter parts of this thesis steers away from the – at times, convoluted – analysis that has emerged over the past two decades on the GPN. It returns to the core principles of value, power and embeddedness on which initial conceptualisations of the GPN were based (Henderson et al., 2002, p. 358), producing an analysis rooted in the framework’s initial goal of improving the ‘human condition in [an] age of economic and geo-political turbulence’. The discussion also places close emphasis on the horizontal, one of few messages the ‘Manchester school’ has consistently and coherently emphasised over the years. Research on livelihoods (Fisher, 2007; Hilson and Garforth, 2013) has shown that the nodes and networks in which ASM is found are, indeed, intricate interconnected horizontal and vertical linkages that are a part of multi-dimensional and multi-layered lattices of economic and social activity. If the goal is to make ASM more of a centrepiece of African development, as stated, governments,

donors and certification advocates must study the dynamics of the informal 'spaces' which the former two have helped to create, and the relationships between the actors who populate them. The subsection that follows therefore adapts the GPN framework for use as a lens to examine ASM activities, and in doing so also outlines the theoretical framework that underlies this thesis by providing a fuller theoretical conceptualisation of embeddedness, trust, power (empowerment), and value.

2.3.3 Embeddedness

Unlike conventional GPN studies, it is suggested that the analysis in this thesis, as well as subsequent analyses applying the GPN framework to the ASM sector, begin with 'embeddedness'. With an understanding of the multiscalar institutional and social factors and processes that have shaped and continue to shape mineral production networks, the dynamics of the particular power structures and ways in which value is created and obtained become clearer. As a result, 'power' and 'value' can be better articulated. As explained by Henderson et al. (2002, p. 252), in the traditional GPN framework, embeddedness can take two forms, although neither is explained in great detail or with reference to the theoretical underpinnings of the concepts. The first, territorial, relates to the 'anchoring' of a GPN's firms in different places, which 'affects the prospects for development in these locations'. For example, a lead firm's commitment to a particular geographical location can mobilise clusters of local businesses. It may also prompt the host government to overhaul taxation and labour policies and embark on large scale infrastructure projects with the aim of attracting foreign direct investment (FDI) and 'embedding' portions of the GPN. These moves ultimately create and can help capture value in host countries.

However as with all extractive industries, and particularly ASM, the territorial embeddedness of initial production activities though influenced by government policies are geospatially fixed by the location of the mineral deposit(s) in the first instance. As the quote from Dicken (2011) outlines at the start of this section, the extractive industries are the 'beginning of the beginning'. Even if the costs of extraction and processing can be made enticing and profitable, if there are no gold or diamonds to mine in the first instance, then mining cannot occur. The territorial location of ASM activities are therefore, to a large extent, governed by the location of readily extractable near surface mineral deposits which lend themselves to being extracted by operators with limited technical and financial capital (Gibb, 2006; Hilson, 2010a).

As such it is the second, network, which resonates more powerfully and is of greatest interest here for examining the local functioning of ASM activities and the social networks of which they are comprised. This type of embeddedness relates to the 'network structure, the degree of connectivity within a GPN, the stability of its agents' relationships and the importance of the network for the participants' (Henderson et al., 2002, p. 452), an analysis of which helps to cast light on the multidimensional and multiscalar *relational processes* that, fundamentally, comprise a network (Weller, 2006). Significantly, however, with the foundational work premised upon there being a 'lead firm' around which a GPN develops, some

clarification is required given that the story for complex extractive industries such as ASM is very different with multiple nodes of non-firm agents.

The theoretical notion of network embeddedness originates from the work of Polanyi (1944) whose writings argued that an exceptional feature of the macro capitalist market exchange economy, contrary to predominantly reciprocal, and redistributive pre-market, feudal, kinship based economic systems that have come before, is that it is disembedded from society, despite in fact the economy being immersed (embedded) in, and inseparable from and a product of social relations. This forms the basis of what is termed the substantivist position in sociological theory that asserts the importance of social relationships, behaviour, and ties of kinship in the economy. It is in contrast to classical and neoclassical, formal notions of the economy (the formalist position), which defines economics by rational calculations of atomised, individual behaviour, and transactions that are separate from social relations (Granovetter, 1985; Machado, 2011).

Straddling the divide, Granovetter (1985, p. 504) asserted that the two opposing substantivist vs. formalist positions work to either ‘oversocialise’ or ‘undersocialise’ the importance of social relations in the economy. Instead, Granovetter argues that economic behaviour and individual rationality is ‘closely embedded in networks of interpersonal relations’ (Granovetter, 1985, p. 504). Embeddedness therefore ‘describes the multiple social, cultural, economic, political, and personal relationships that situate actors in networks, regions, and social groups’ (Weller, 2006, p. 1251). Embeddedness operates at a range of scales, with varying overlap, influence and scope from the: 1) cognitive, interpersonal, place-based creation of behaviours between individuals; 2) to the local territorial scales, incorporating smaller groups and communities and driven by cultural and collective understandings and common ways of doing; 3) as well as the wider structural network level of embeddedness determined by economic, cultural, and social relations also governed by regulatory and institutional networks; 4) to finally political forms of embeddedness operating at the national and international levels that comprise the rule making powers and actors (Zukin and DiMaggio, 1990). The analysis of ASM that follows in this thesis must therefore take into account these multiple forms and scales of embeddedness in order to understand what impact they have on the social and organisational networks of mining activities, and, subsequently how mineral certification and formalisation strategies may be more effective.

In addition to these multiple scales and forms of embeddedness, central to Granovetter’s conceptualisation, and what is argued here may be of great use in helping to better understand the local functioning of ASM activities, is the role that *trust*, and conversely malfeasance (deviance from a trusted position), plays in explaining the workings of social economic relations at the interpersonal and meso-level. Trust is required for any socio-economic transaction (Burbidge, 2013). Yet, despite the rich body of interdisciplinary literature that has since explored the importance of trust in the functioning of social and organisational networks, the original GPN framework makes only passing reference to its importance:

Network embeddedness can be regarded as the product of a process of trust building between network agents, which is important for successful and stable relationships. Even within intra-firm networks, where the relationships are structured by ownership integration and control, trust between the different firm units and the different stakeholders involved might be a crucial factor, such as in the case of joining ventures (Henderson et al., 2002, p. 453).

A fuller theoretical conceptualisation of trust is therefore needed to mobilise the concept as part of the embeddedness lens used in this thesis. This is especially true given that despite being an under-studied and under-theorised concept in the ASM literature, the few studies that do explore trust have shown it to be a central component of the interpersonal relationships and economic transactions between miners, buyers, traders, and sponsors in deeply embedded social production networks (Grätz, 2004; Geenen, 2011; 2015).

There is no universal definition of trust, with a wide range of academic disciplines treating the relational process in different ways and combining different theoretical categories of trust to build frameworks for analyses in particular contexts and settings (Lane and Bachmann, 2001; Marková et al., 2008; Beldad et al., 2010). Like embeddedness, trust operates at varying societal scales and in multiple dimensions, and has been examined and conceptualised accordingly. A brief overview here serves to illustrate this distinction and the varied conceptualisations of trust before arriving at a suitable conceptualisation for use in exploring informal ASM production networks. Setting aside psychological notions of trust, which despite being important in terms of framing the emotional co-creation of *interpersonal* trust¹⁸ (Simpson, 2007) between two individuals is beyond the realms of this thesis, the sociological and organisational literature on trust can be broadly split along a continuum (Rousseau, et al., 1998; Weller, 2006).

At one end, the micro-scale focuses on examining the interpersonal relationships referred to variously as process-based, personal, or reciprocal trust (Zucker, 1986; Radaev, 2005; Höhmann and Welter, 2004). This form of trust is a co-created, bilateral relationship between two or more agents, based on the initial knowledge of the partner and, importantly, is formed over long periods of time ‘where persons have come to know each other’ (Odera, 2013, p. 128). A rich body of work examining these interpersonal relationships is underpinned by sociological theories of trust and studies that help to explain the formation and functioning of social networks in terms of strong and weak *ties* between *nodes* of embedded individuals (Granovetter, 1973); the importance of reciprocity in ‘modern’ formalised socio-economic systems as well as those still dominated by large portions of informality and socio-economic transactions determined by kinship and characteristic-based trust, as has been shown to be the case in many cultures in sub-Saharan Africa (Lomnitz, 1988; Coleman 1998; Lyon, 2005); and the essential role that trust plays in creating social capital, which is defined as ‘features of social organisations such as

¹⁸ According to the interpersonal perspective in the psychological literature, ‘trust is a psychological state or orientation of an actor (the truster) toward a specific partner (the trustee) with whom the actor is in some way interdependent (that is, the truster needs the trustee’s cooperation to attain valued outcomes or resources’ (Simpson, 2007, p. 264).

networks, norms and social trust that facilitate coordination and cooperation for mutual benefit' (Putnam, 1995, p. 66).

At the meso-level, trust is examined within and between groups of people and organisations. It is based on characteristics such as organisational affiliation, role, and reputation as well as personal and group attributes such as ethnicity, gender, religion, position, age, and kinship, and culturally specific norms. The latter of which have been shown to be especially important in informal socio-economic networks in sub-Saharan Africa and in effecting the creation of interpersonal trust (Höhmnn and Welter, 2004; Lyon, 2005; Burbidge, 2013; Odera, 2013). Within the business and management literature, these forms of characteristic-based or collective trust (Zucker, 1986; Höhmnn and Welter, 2004) have been explored extensively in terms of buyer-supplier relationships, inter-organisational and stakeholder relations, the theoretical interrelatedness of trust with notions of power, agency and the moral economy in business ethics (Blois, 1999; Masuku and Kirsten, 2010; Greenwood and Van Buren III, 2010; Brooks et al., 2017), and more recently the role of trust in the growing online electronic services and e-commerce businesses (Beldad et al., 2010).

At the other end of the spectrum, theoretical frameworks and studies explore trust at the macro-level in terms of the relationship between individuals, groups, and organisations, and the wider regulatory, institutional and political landscape they are embedded within, as well as its importance for the formation of social capital and post-conflict governance in developing countries (Baliamoune-Lutz, 2011; Wang and Gorden, 2011; Hemmert et al., 2016; Sangnier and Zylberberg, 2017). This form is termed institutional trust (Zucker, 1986; Höhmnn and Welter, 2004), and is also conceptualised in the subsequent sub-section of this thesis during the interrelated discussion of empowerment as the 'opportunity structure' that determines the ability of an agent or organisation to make purposeful choices that are pursuant to them (Section 2.3.3). Despite these distinctions, in reality these different scales of trust often overlap, and are interrelated in terms of explaining the formation of trust (or mistrust) at various levels. Trust is also highly context specific – 'trust is a quintessentially social reality that penetrates not only individual psyches but also the whole institutional fabric of society' (Lewis and Weigert, 1985, p. 982).

As part of mobilising the GPN framework, the analysis of trust in this thesis focuses on the interpersonal level of interactions between miners, buyers, dealers and other agents along the chain of supply at the local level. These are the horizontal linkages: longer term, cooperative arrangements among agents that require interdependence. Trust therefore involves the pooling of social, economic, and physical resources to accomplish a common goal (Ramdoo, 2013; Microlinks, 2017). The reasons for focusing on interpersonal trust in the analysis are two-fold. First, it is argued that the conceptualisation of territorial and network embeddedness as well as opportunity structure in the subsequent discussion on empowerment are sufficient to capture the institutional dynamics within which ASM operations are embedded within and governed by. Second, while poorly covered in the ASM literature, the few studies that do consider the role of trust do so at the micro-level providing a glimpse of its importance to the

functioning of local social production networks. For example, examining the creation of trust between ASM gold traders as a social process in Benin, Grätz (2004, p. 165) describes how *confidence* (interpersonal relationships) and *trust* (in terms of the broader functioning of the social system, institutions and norms) (Seligman, 1997) are accumulated over extended periods of time. Through an 'award system' based on personal experiences and trial-and-error methods, large and intermediary gold traders test 'whether they may trust potential trading agents by looking at performance and success ... gradually increase[ing] their working capital' as they build up the relationship. In this setting, trust is also influenced by moral pressure, as borrowers need to maintain their social standing as reputable traders in order to access additional future finance.

This point also resonates greatly with the observation outlined earlier (Section 2.3.3) that, unsurprisingly, FLO has yet to develop a way to adequately replace gold buyers (the supposed unscrupulous middlemen). A more detailed and thorough examination of the role of trust at this level, it is argued, will therefore shed light on the role of middlemen in providing vital sources of finance in mutually beneficial, interpersonal trust-based relationships built up over long periods of time. While also adding weight to the argument that there is a clear need to better understand these local production networks in order to inform the design of better connected certification and formalisation initiatives.

A final area of the literature on trust that is of even greater relevance to this thesis are the conceptualisations and ways in which trust operates and governs economic activities in the informal sector. This is because ASM is a largely informal activity. While trust has been shown to be important in governing informal exchange networks in formal systems (Lomnitz, 1988), in an informal setting trust holds even greater significance by establishing a set of general expectations that reduce the complexity of everyday transactions in the absence of legally enforceable regulations. Should there be a problem between informal traders and miners it is not possible, except perhaps in the most extreme cases, to go to the government authorities or police for support (Grätz, 2004; Burbidge, 2013). Odera (2013) provides a useful conceptualisation that brings the theoretical constructs of informality and trust together. Conceptualising trust as an informal institution, the author distinguishes between two forms of trust in the context of informal economies in sub-Saharan Africa, these are briefly reviewed here so that they can be mobilised as part of the adapted GPN framework.

First, Odera (2013) outlines the Social Networks Dimension which takes into account the importance of ethnicity and kinship that act to strengthen or weaken trust among people of different communities (Webster and Fidler, 1996; Tripp, 1997; Lyon, 2005; Meagher, 2005) as well as gender in the formation of trust-based partnerships in African societies and social networks. Women are estimated to comprise, in some cases, as much as 50 per cent of the workforce in ASM and face additional challenges relative to men due to cultural norms and perceptions that make it difficult for them to become licence holders and concessioners, recruit and retain staff, and even secure bank loans in African societies (Yakovleva, 2007; AMDC, 2015; McQuilken and Hilson, 2016; Rickard et al., 2017). Including ethnicity, kinship and gender in the analysis will help cast light not only on how trust is formed but also the wider socio-cultural network

and opportunity structure ASM stakeholders are embedded within and how these factors influence the functioning of production networks in the region. This will also help address the gap in knowledge presented in Section 2.2.2 that has seen certification schemes based largely on Latin American experience fail to take stock of the unique circumstances and socio-cultural influences of ASM communities in sub-Saharan Africa.

Second, Odera (2013) outlines the Business Cooperation Dimension which posits that trust fills the vacuum left by the lack of formal institutions, building up over long periods of time through reciprocity. Trust replaces formalised rules and regulations, and through the accumulation of social capital may subsequently lead to an increase in cooperation between entrepreneurs within extensive business networks and subsequently greater productivity in the pursuit of mutually beneficial goals. This is especially important in clandestine operations, such as informal ASM activities, the functioning of which is made possible by trust-based partnerships and cooperation between individuals. An analysis of how trust can facilitate business cooperation in ASM will help shed light on the more recent emergence of ‘necessity-driven’ and ‘opportunistic entrepreneurs’ in the ASM literature whom, it is argued, are able to navigate the often complex socio-political and bureaucratic landscape needed to obtain a licence due to their unique position and access to significant capital investment (Hilson and Hilson, 2015; Hilson and McQuilken, 2016; Hilson, 2017a). This conceptualisation of how trust enables business cooperation will also help assess the extent to which simplified licensing procedures and the removal of bureaucratic and overly burdensome regulatory regimes may help miners formalise (referred to as the *Legalist* school¹⁹ in discussions on informality (De Soto, 1989; 2002; Chen, 2012)), as well the need to empower miners to become agents of their own change in the process (Spiegel and Veiga, 2009; Hilson et al., 2016) as the next section on power explores.

As the review here has shown, trust, like embeddedness cannot be thought of as acting in isolation. Instead, trust is as an interrelated and interdependent social process that is intimately connected to notions of power and the ways in which power is obtained and exercised, which in turn influences how value is captured. In line with Weller (2003) it is clear that in order to successfully mobilise the adapted GPN framework to capture the realities of ASM production as part of this thesis, it is necessary to consider embeddedness, trust and power at all scales. The interpersonal trust between stakeholders at the local level as well as the broader social network, cultural, and institutional landscapes miners and communities are embedded within and governed by. A fuller exploration of embeddedness within the institutional landscape and, relatedly, trust at the interpersonal, micro-level of transactions between ASM stakeholders, through the adapted GPN lens in this thesis will therefore add to this burgeoning literature on the role of trust in local ASM production networks. The next sub-section focuses on the interrelated concept of power.

¹⁹ The *Legalist* school is based largely on De Soto’s concept of *extralegality* (De Soto, 1989; 2002) and conceptualises the informal economy as being composed of ‘plucky’ micro-entrepreneurs forced to operate informally due to overly-bureaucratic licensing and titling procedures. The argument being that extending strong legal property rights to informal operators and streamlining the barriers to formalisation, will help bring them into the formal domain, and in doing so, convert the many assets or informal operators into real productive capital to their benefit, and that of the society.

2.3.4 Empowerment (power)²⁰

It is proposed that both power and value are examined together because it is argued they cannot be separated in ASM. This resonates powerfully with Henderson et al. (2002, p. 450), who states that ‘the source of power within GPNs and the ways in which it is exercised is decisive for value enhancement and capture and thus for the prospects of development and prosperity’. Furthermore, the three-pronged notion of power (corporate, institutional, and collective) put forward by Henderson et al. (2002) in the original framework is unable to effectively articulate the complex horizontal relationships found throughout local ASM production nodes. In this subsection, power is therefore re-conceptualised taking into account the more comprehensive notion of empowerment. Having been explored extensively in the international development literature (Freire, 1970; Sen, 1989, 1999; Rowlands, 1997; Narayan, 2002; Alsop et al., 2006; Ibrahim and Alkire, 2007; Willis, 2011), empowerment is comprised of the interplay between two fundamental components: 1) agency, or the ability of an actor (or group) to make purposeful choices concerning what they value; and 2) the extent to which the surrounding opportunity structure (formal and informal regulations, actors, institutions, etc.) enables or inhibits this agency (Alsop et al., 2006; Ibrahim and Alkire, 2007; Narayan, 2002; Sen, 1989, 1999). With this definition of empowerment in mind, a brief overview of its antecedents is provided here in order to fully understand and conceptualise the term.

As McQuilken, (2016) explains, the origins of empowerment in the development literature can be traced back to the 1970s. Freire’s (1970) seminal work deconstructs the *(de)humanization process*, which can be interpreted as the ability of a person to gain empowerment. In the author’s conceptualisation, empowerment is rooted in the notion of power between two agents: specifically, as the relationship between the oppressed and the oppressor, their agency, and the opportunity structure that may or may not exist in order to exercise it. Although Freire’s thought-piece does not fully account for the multiplicity of expressions and echelons of power, it remains a fundamental cornerstone in later conceptualisations of empowerment. However, it was not until the 1990s that a significant body of development literature began building on Freire’s work, largely in response to the damaging effects of World Bank-financed structural adjustment programmes (SAPs) and associated ‘top-down’ neoliberal reforms implemented during the previous decade – the ramifications of which are detailed in Section 2.2.1 (Laderchi, et al., 2003; Fridell, 2004; Green and Hulme, 2005).

It is against this background that the literature began to deconstruct empowerment further, part of a broader shift in focus at the time toward ‘bottom-up’ participatory development (Hunt, 1989; Willis, 2011) – a re-conceptualisation of poverty in terms of entitlements, human rights, social capabilities, freedoms and multiple dimensions (Sen, 1999). Examining the concept in relation to feminism and development in the 1990s, Rowlands (1997) defined four categories of empowerment, each embedded within the root-concept of power: 1) ‘power over’ (domination and control over others); 2) ‘power to’

²⁰ The section of this chapter on ‘empowerment’ has informed the basis of: McQuilken, J. (2016) ‘Ethical gold’ in sub-Saharan Africa: A viable empowerment strategy?, *International Development Planning Review*, 38(2), pp. 179–199.

(self-awareness to see possibility for change); 3) 'power with' (collective action); and 4) 'power from within' (the ability from within individuals to help oneself encompassing feelings of self-esteem and self-worth). The latter was also a key part of Freire's conceptualisation of humanization (Rowlands, 1997; Willis, 2011; Quaedvlieg, et al. 2014). Concurrent influential work by Sen (1989; 1999) moved the debate forward, shifting the focus to the individual and welfare economics, subjects which had hitherto been largely excluded from normative analyses. Sen's Capabilities Approach includes conceptualisations of agency and freedoms, now considered key constituents of empowerment. Another important contribution, highlighted by Ibrahim and Alkire (2007), was that of Oakley (2001), who differentiated between the scenarios of 'variable-sum' and 'zero-sum' in the process of gaining power. In the former, the marginalised can be empowered without changing existing levels of power; in the latter, power can only be gained as a result of a reduction of power held by others.

Building on this momentum, the International Monetary Fund (IMF) broached the notion of empowerment in its Poverty Reduction Strategy Papers (PRSPs), three-year national development plans, which were a featured element of the Highly Indebted Poor Countries (HIPC) Initiative. A PRSP details a country's macroeconomic objectives, government spending targets and social policies aimed at facilitating development and alleviating poverty (IMF, 2014). Replacing, and designed to counter the effects of, SAPs, PRSPs are prepared by recipient governments following a broadly participatory multi-stakeholder approach. Given, however, that feedback is provided through an 'advisory' panel, and approval from the IMF and World Bank is required (IMF, 2014), the extent to which PRSPs enable countries to determine their own development paths is open to debate. Indeed, Fraser (2005, p.1) argues that PRSPs are a technology of social control: a subversive mode through which institutions can impose policy conditions (power over) and shape domestic political space under the guise of participation. With the requirement that PRSPs be updated and re-approved every three years (IMF, 2014), there are clearly interesting questions concerning the dynamics of power in this process of participatory development.

The shift in rhetoric in the 1990s toward 'bottom-up' development implied that empowerment was embedded in development interventions. In 2001, the World Bank made empowerment a central theme in its World Development Report, *'Attacking Poverty'* (World Bank, 2001) and later defined it as 'the expansion of assets and capabilities of poor people to participate in, negotiate with, influence, control, and hold accountable institutions that affect their lives' (Narayan, 2002, p.11). Empowerment has since become a key part of the Bank's rhetoric, and the manifestos of a number of other donor organisations and NGOs.

As empowerment has gained currency as a theme in development, it has taken on greater meaning and been applied in a wide-range of contexts (Narayan, 2002). In an attempt to create a short-list of internationally comparable indicators, Ibrahim and Alkire (2007) reviewed a staggering 29 definitions of the many more available, and, Alsop et al. (2006) reported that over 1,800 World Bank project documents mentioned 'empowerment'. Central to all of these interpretations, however, is the interplay between two fundamental components: agency and opportunity structure. This widely acknowledged interdependence

(Ibrahim and Alkire, 2007; Alsop et al., 2006; Samman and Santos, 2009) is mirrored in business and management conceptualisations that distinguish between psychological and structural empowerment, respectively (Maynard et al., 2012).

Agency can be considered as ‘an actor’s or group’s ability to make purposeful choices’ (Alsop et al., 2006, p.11) concerning what ‘they value – and have reason to value’ (Sen, 1999, p.18). An agent, in this sense, is ‘someone who acts and brings about change, and whose achievements can be judged in terms of [their] own values and objectives’ (Sen, 1999, p.19). Empowerment can therefore be viewed, in part, as the ability of a group or individual to be agents of their own change. Agency is determined by an individual’s assets (land, housing, mining permits and equipment) and capabilities,²¹ including human (health and education) social (belonging, sense of identity, leadership and trust relations) and psychological (self-esteem, self-confidence, the ability to envisage a better future); and, by collective assets and capabilities, such as civil society, political voice, representation and identity (Samman and Santos, 2009). At the crux of Sen’s argument is the view that agency should also be considered an end in itself, given that it enables the achievement of other development outcomes, including economic empowerment. However, even if a person has the assets and capabilities to bring about their own change, they cannot do so unless institutional structures allow them to. For example, an unlicensed small-scale miner may have the assets, capabilities and desire to secure a mining permit but a lengthy, bureaucratic registration process may impede and dis-incentivise any move to acquire it (Hilson and Van Bockstael, 2011).

Opportunity structure is the institutional context within which the agent is embedded that inhibits or enables them to pursue its purposeful choices (Narayan, 2002; Alsop et al., 2006; Ibrahim and Alkire, 2007). The institutional context determines whether or not a person can exercise their agency effectively. It includes both formal and informal rules. The former comprises laws and regulatory frameworks that officially govern private organisations, markets and people at the local, national and international level (e.g. tributer mining agreements (Hilson, 2008b); national mining codes such as Ghana’s *Minerals and Mining Act, 2006*; and, conflict-free legislation such as the Dodd-Frank Act 2010). The latter encompass the unofficial norms that govern relationships within and between networks of organisations and communities (e.g. the non-legally binding OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas (OECD, 2011) and payments to facilitate the receipt of small-scale mining licences (Hilson and Van Bockstael, 2011)) as well as the socio-political aspects, values and cultural norms of behaviour that operate at the household level and among social groups and communities (e.g. child labour (Hilson, 2008c; Hilson, 2010b) and traditional land tenure (Hirons, 2013)). It is thus the interrelationship between the institutional opportunity structure (that enables or inhibits) and the agency of an individual or group that collectively determines empowerment.

Though rarely referred to explicitly, empowerment is of implicit concern in the ASM literature. As an example, Banchirigah (2006) makes clear the link between the empowerment, or rather marginalisation,

²¹ Capabilities are the combinations of ‘substantive freedoms he or she enjoys to lead the kind of life he or she has reason to value’ (Sen, 1999, p. 87).

of small-scale miners from decision-making processes and the increased informality of the sector in Ghana. The author focuses on the institutional structures that have inhibited and marginalised miners from engaging in policy reform debates, concluding that the very reforms designed to formalise the sector have rather fuelled the growth of informal ASM activity. Additionally, Spiegel (2012) examines the empowerment potential of microfinance schemes for ASM. Identifying a lack of local decision making and power, the author advocates for 'gold miners themselves – rather than donors' (Spiegel, 2012, p.502) to take the leadership in developing microfinance groups with donors facilitating the process. Despite no explicit recourse to empowerment literature, Spiegel (2012) is advocating for miners to be their own agents of change and for a power shift (cessation of power over and provision of power to) in the local opportunity structure that is inhibiting miners from empowering themselves.

The conceptualisation of empowerment provided here can also be adapted to evaluate the extent to which a private sector organisation (such as a large-scale mining company) may be empowered to be an agent of its own change. Peterson and Zimmermann (2004) identify three key components of organisational empowerment: intra-organisational, specifically, the characteristics that determine the internal structure and functioning (power within); inter-organisational, which concerns the linkages between organisations (power with); and extra-organisational (agency and opportunity structure), or the ability of an organisation to take actions that affect the larger environments they are embedded within. Another relevant area of the literature is the body of business management research that emphasises 'change capacity' (e.g. Wetzell and Van Gorp, 2014). Soparnot (2011, p. 641), defines change capacity as 'the ability of the company to produce solutions (content) that respond to environmental evolution (external context)', and identifies three dimensions: 1) context, relating to the available resources to facilitate the process; 2) process, which includes the principles of implementing change; and 3) learning, which relates to the ability of an organisation to be introspective.

The components of inter, intra, and extra-organisational empowerment and dimensions of change capacity have clear commonalities with the concepts of agency, capabilities and opportunity structure, as well as Rowland's (1997) powers. Organisational empowerment, therefore, depends upon the agency of a company, which is, in turn, related to the resources, assets, capabilities; elements of power available; and the interaction with the opportunity structure in which a company is embedded. In sum, the empowerment of a private sector organisation is as equally complex and multidimensional as that of an individual and shares the same – albeit adapted – fundamental components of agency and opportunity structure.

The discussion thus far has, crucially, highlighted the multidimensionality and complexity of empowerment as a process; and, emphasised the fundamental constituents of power, agency and opportunity structure. Here the agency and opportunity which comprise this framework are separated in order to highlight that even if individuals have agency, they may be constrained by the institutional environment. This approach is critiqued by Samman and Santos (2009, p. 4) for potentially 'confusing [empowerment] with the whole of the development process'. Instead and like Ibrahim and Alkire (2007),

the authors focus on the individual by conceptualising empowerment solely as the expansion of agency – given that agency encompasses process and opportunity ‘freedoms’. For the purposes of this framework, however, the distinction is maintained in order to enable a more complete analysis of ‘ethical’ gold schemes, given that they operate at different levels; are implemented by a range of NGOs, government and private institutions; and, that miners are deeply embedded within existing dynamics of global production networks.

2.3.5 Value

Finally, in this adapted and deeper theoretical conceptualisation of the GPN framework, the discussion turns to value. As outlined, it is intended that power and value be explored together given the interconnectedness of the two concepts. However, for clarity and in order to fully conceptualise what forms of value in ASM networks this thesis is interested in understanding and mapping, the final part of the theoretical framework and this adaptation of the GPN, turns to briefly examine the concept of value in greater detail.

As Henderson et al., (2002, p. 448) make clear in their original framework: ‘by ‘value’ we mean both Marxian notions of surplus value and more orthodox ones associated with economic rent’. In a similar vein this thesis is interested in revealing the hidden network of social constructs and labour relations involved in ASM and from which profits are derived, as well as the various forms of economic rents that are known to be extracted by landowners, chiefs and other stakeholders in local ASM production (Mahama and Baffour, 2009; Crawford and Botchwey, 2016; Hilson and McQuilken, 2016). To explain the idea of Marxian value briefly: The free-market exchange of commodities, ‘anything produced with the express purpose of selling [at] a profit, rather than using it’ (Hudson et al., 2013, p. 9), is a central tenant of capitalism, neoliberal economies and globalisation. Through the ever-expanding process of *commodification* primary and secondary products, tertiary sector services, knowledge and even culture have been commodified and are now traded for profit (Coe et al., 2007). However, although the *exchange value* (price) of a commodity may be somewhat indicative of the cost of production and how the commodity was created (infrastructure required, profits extracted at each stage etc.) it does little to reflect the complex social processes involved – the hidden network of social constructs and labour relations of production and how they connect to reach the final consumer. This disconnection of the consumer from the producer through a quantitative monetary value obscures the qualitative geographical, historical and context specific origins of commodities as they are traded in unequal global markets. The consumer is removed from the formal, and perhaps most significantly, the informal conditions under which the commodity was made. As a result, all commodities appear to have an inherent value and are tradable in relation to one another, the saleable commodity becomes the bearer of value transcending its inherent ‘use value’ and masking the social relations under which it was produced. Marx termed this masking commodity fetishism (Coe et al., 2007; Hudson et al., 2013).

Particular to Marx's critique of capitalism was the concept of 'abstract labour' – qualitatively different forms of labour are transformed into quantifiably comparable homogenous units. For example, the arduous and dangerous labour involved in artisanal and small-scale mining of precious minerals is entirely different from the labour involved in selling an item of jewellery from a high-end shop in London's infamous Bond Street – the qualitative differences are hidden by the sphere for exchange (Coe et al., 2007; Selwyn, 2013; Hudson et al., 2013). This obscurification therefore makes it difficult to analyse the connections and interdependencies of highly complex networks of global commodity production. In relation to the mineral extractives, and in particular the ASM sector, this presents challenges to 'conscientious' consumers, mineral certification schemes, companies adhering to chain-of-custody legislation, as well as academics examining mineral networks to identify developmental opportunities. By mobilising the GPN framework, this thesis will reveal the hidden networks of labour production in ASM and in doing so provide more detailed information to support the development of more robust certification and formalisation initiatives.

Like the original GPN framework, it is proposed that the research will collect detailed information concerning the *creation, enhancement, and capture* of value at mine sites in the surrounding communities and along the multidirectional networks as diamonds and gold are exchanged in the value chain. In terms of value creation, details regarding employment and labour hierarchies, and socio-economic structures at mine sites, skills, working conditions, technology and the links to power, trust and the wider embedded network structure will be considered in order to build up a picture of how individuals and groups create value in ASM through labour and exchange. The enhancement of value will consider the use and different organisational forms of labour and technology, given the highly heterogeneous nature of activities even between adjacent ASM sites (Ferring et al., 2016) sharing of knowledge on how to improve the efficiency of operations and information asymmetries such as access to international gold and diamond prices, capital and reciprocity through trust and interpersonal relationships, any value-adding activities, and the extent to which miners are empowered or constrained by the institutional frameworks they are embedded within and a part of. The final category, capture, is closely linked to the notions of power, agency, empowerment and the network embeddedness. Details on value capture will examine issues of ownership, property rights, licensing, and power that determine who can profit and by how much at various levels, the wider mineral governance policies that influence the capture of value at the national and relatedly local levels such as whether minerals are exported refined or not and the taxes paid, and access to markets. Naturally, in reality, there is much overlap between these different forms of value and they are deeply interconnected with the other analytical categories of embeddedness and empowerment.

Take Geenen's (2015) in-depth analysis of small-scale gold mining communities in the DRC as an example. Through the theoretical lens of *access*²² and exploration of the interrelated concepts of social norms, agency and power, the author provides details of the mutual dependencies between miners and traders, demonstrating the importance of trust and reciprocity in social networks of ASM production, and

²² Access can be defined as the 'ability to derive benefits from things' and is commonly used to explore how different social groups and agents are able to benefit from natural resources (Ribot and Pelus, 2003, p. 1).

arguing that ‘trust is a way of decreasing traders’ transaction costs while guaranteeing successful dealings in the future’. In this case, value is created through the initial extraction of gold, which is also dependent on the sale, enhanced through refining of the mineral ore, and captured through the sale. The trader in turn will aggregate the gold, perhaps refine it further to enhance the value, and may need to travel to a larger socio-economic node (town or city) in the production network to sell the gold for a profit. The mobility of the various agents and their ability to capture the value will be dependent upon their own agency, which is in turn determined by power and their social, financial and other capitals, whether they are working formally or informally, and the wider institutional opportunity structure and governance frameworks at the local, national, regional and even international levels the production networks are a part of, and that they as agents are embedded within.

To complement this triplet of value, it is also worth considering the various forms and concept of *upgrading* often used in the value chain literature (Humphrey and Schmitz, 2001). Although, like the majority of the GPN framework, the term upgrading is primarily focused on firm level activities, it also has relevance to the potential of ASM operators and stakeholders within production networks to improve their income and position within a value chain by moving into higher-value activities. This can be in the form of technological, institutional and market capabilities that allow an agent to improve their ability to create, enhance, and capture value (Mitchell, et al., 2009). The different forms of upgrading outlined in Table 2.7 include traditional typologies – process, product, functional, and chain – (Kaplinsky and Morris, 2002) as well as additional upgrading strategies such as the notion of social upgrading (Barrientos et al., 2011) and those suggested by Mitchell et al., (2009) for use in studying the livelihood strategies and potential for socio-economic development in rural, predominantly agriculturally based value chains in developing countries.

It is therefore proposed that these different forms of upgrading also be considered alongside the potential for ASM stakeholders to create, enhance, and capture value during the analysis in order to shed light on the ways in which agents improve their socio-economic position as well as the potential to support agents in order to do so. In this way, the analysis not only aims to better understand the functioning of these ASM networks, but also make some practical recommendations on how to improve their developmental position, and thus contribute to the framework’s initial goal of ‘improving the human condition’.

Table 2.7 Forms of upgrading strategies in value chains

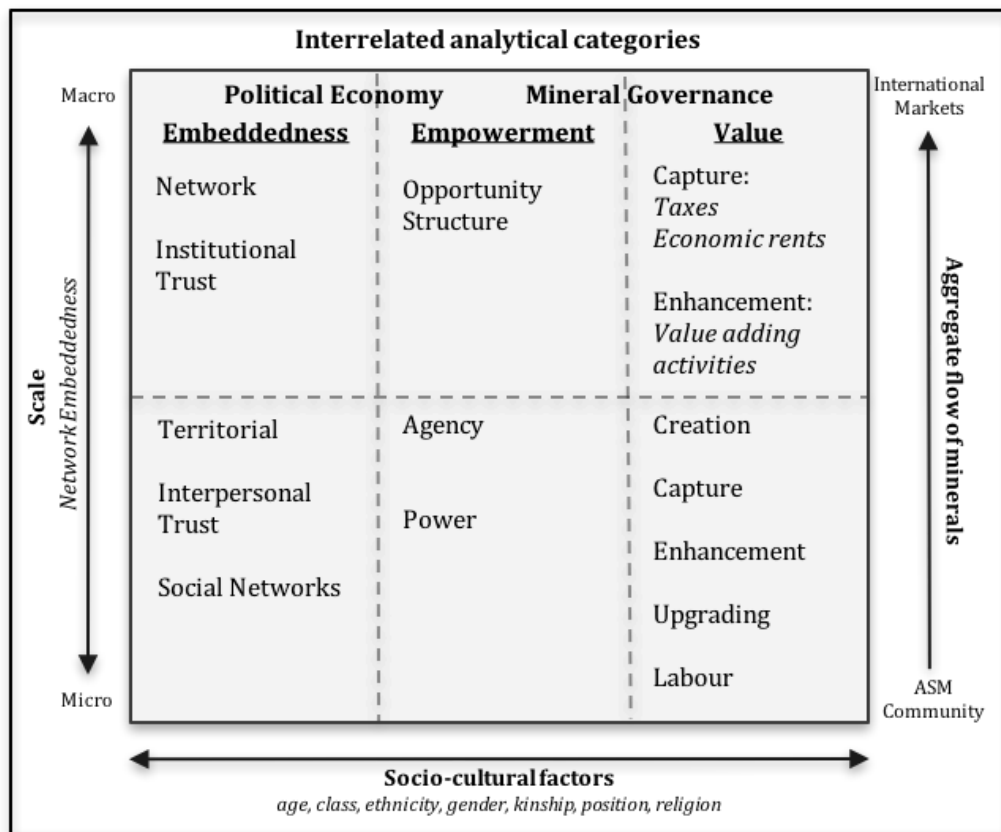
Upgrading strategy	Description
Process upgrading	Increasing the efficiency of internal processes so that they are better than rivals. Such as different organisational and labour structures, technology, and ways of working with other stakeholders in ASM value chain.
Product upgrading	Introducing new products or improving old products faster than rivals. This has less relevance to ASM, however could include the activities such as refining before selling gold, investing in better refining processes, and jewellery making.
Functional upgrading	Increasing value added by changing the mix of activities conducted within the firm. For example owning a bulldozer rather than having to rent or 'outsource' mining equipment.
Chain upgrading	Moving to a new value chain entirely. Such as using the skills and capital from ASM to move into an alternative livelihood with less risk of greater socio-economic returns, and the ways in which ASM intertwines with agricultural activities in rural economies.
Social upgrading	The process of improvements in the rights and entitlements of workers as social actors, which enhances the quality of their employment. This may include access to better work, for example a miner gaining experience and moving to a higher income earning activity, as well as improvements in working conditions, well being, protection and rights.
Horizontal coordination	Increasing cooperation among agents in the same functional nodes. Working in cooperation with other ASM operators, and stakeholders in other functional areas not directly involved in production, such as financiers, associations, and service providers.
Vertical coordination	Increasing cooperation and developing relationships with actors between nodes, and in different levels of the value chain.
Enabling environment	Changes to the external governance of the value chain (regulations, tax, legal frameworks) that enables agents to improve their position. This is closely related to the exploration of network embeddedness and opportunity structure outlined in this thesis.

Sources: Kaplinsky and Morris (2002); Mitchell et al. (2009); Barrientos et al. (2011).

2.3.6 Summary

The adaptation of the GPN framework outlined in Section 2.3 moves it away from firm level analyses to capture details of the local level, informal socio-economic ASM activity re-conceptualised as *social production networks*. It does so by incorporating a fuller theoretical conceptualisation of embeddedness and trust, envisioning ASM agents as being embedded within interpersonal, multi-directional social networks of production and business cooperation, replacing the somewhat uni-dimensional notion of power to include empowerment which considers the importance of social capital and the extent to which miners are able to be agents of their own change within the overarching opportunity structure and mineral governance frameworks, and introducing conceptualisations of value that focus on labour processes, local organisational arrangements – as opposed to business to business relationships in value chains – and the opportunities for value creation, enhancement, capture, and upgrading by ASM stakeholders (Figure 2.3).

Figure 2.3 Adapted framework for social production network analysis of ASM



2.4 Introduction to the case study

To establish the formalisation platform needed for ethical mineral schemes to break the poverty cycle in which tens of thousands of African ASM operators now find themselves trapped, a deeper knowledge of the many – at times, overlooked – nuances of the rural landscapes where they are based and specificities of their local production are needed. The aim of this thesis, therefore, is to broaden understanding of the demographics of ASM groups operating in rural sub-Saharan Africa, the dynamics of their operations and the intricacies of the local production networks they are a part of. The thesis mobilises the adapted GPN framework to ‘map’ two strands of local gold and diamond production in rural Ghana, the location of the largest and complex ASM sectors in sub-Saharan Africa. Using these two production nodes as embedded case studies, the thesis aims to provide a broader conceptualisation of the complexities and relationships forged between the key actors who populate ASM networks. The specific objectives of the thesis are as follows:

- 1) To critically reflect on why formalisation has proved to be so elusive by mapping and examining the overarching international and national mineral governance frameworks operating in sub-Saharan Africa, and specifically Ghana, as well as the activities of ethical mineral certification initiatives in the country.
- 2) To improve understanding of the dynamics of local ASM production networks, operators, and their experiences within the poverty trap by applying the adapted GPN framework to map and analyse the social networks of artisanal and small-scale gold and diamond production in Ghana.
- 3) To explore the potential and critically reflect on the utility of the adapted GPN framework for generating new insights and knowledge by applying it to map local ASM production networks.
- 4) To provide specific and generalisable policy recommendations for improving formalisation strategies and ethical mineral certification initiatives in Ghana, as well as the wider sub-Saharan Africa region, that are more in tune with the realities of ASM on the ground.

As will be explained in Chapter 3, to address these objectives, data were drawn from a series of interviews with policymakers and other institutional-level actors, as well from interactions and mapping exercises conducted at two study sites: 1) Tarkwa, which is rich in gold; and 2) Akwatia, which is Ghana’s principal diamond-mining area. These sites were selected because they have long been the targets of certification schemes as well as offer a glimpse of the very different production networks in place across mineral commodities.

2.4.1 Introduction to the Ghana Case

The strength of case study research is that it provides an in-depth detailed and contemporary analysis (Yin, 2009). It can probe deeply into the social systems and processes governing socio-economic behaviour, and complex multiscale and multifaceted interrelationships between people engaged – in this instance, in ASM – and the institutional frameworks in which they are embedded. Ghana is an appealing

case because it has a burgeoning ASM economy with a lengthy history. Today, at least one million people are employed in the sector, which accounts for over 60 per cent of the country's mining labour force, and has been in existence for over 1,000 years (Hilson, 2002c; Hilson, 2006; Tschakert, 2009). With the caveat that ASM is context-specific, Ghana is an archetype of the poverty-related challenges found throughout the sector in sub-Saharan Africa: it is a mineral-rich country, with a favourable investment climate and regulatory framework that prioritises foreign direct investment in large-scale resource extraction (Campbell, 2004). The country was the recipient of the most mining investment in Africa between 1990 and 2001, receiving funding in the range of USD 1.8 billion (Childs, 2008). Today, gold accounts for over 95 per cent of Ghana's total mineral revenues (ICMM, 2015). In 2012, the country produced 3.3 per cent of the world's gold, with total exports worth USD 5.64 billion, making it the second largest producer in Africa after South Africa (KPMG, 2014). While Ghana is no longer a major producer of diamonds, the town of Akwatia, in the Eastern Region remains home to a struggling yet vibrant small-scale diamond mining community that was once the envy of West Africa. It is the location of almost all of the rough stones ever produced in the country. In 2015, Ghana exported over 185,000 carats, valued in excess of USD 6.9 million (KPCS, 2015). Yet despite these mineral riches Ghana remains a developing country, with medium human development outcomes (Table 2.1). The country therefore offers the potential to examine and compare well-established gold and diamond production networks in impoverished rural landscapes. As outlined in Section 2.3.1, if any certification scheme or formalisation initiative is to succeed it will need to be applicable to both gold and diamonds, as well as more complex ASM landscapes than the current pilot countries (Kenya, Tanzania, Uganda) in order to overcome issues of replicability, and the targeting of 'low hanging fruit'.

The growing attention being paid to the ASM sector in Ghana also makes it a compelling case for investigation. In terms of its relative importance to the national economy, in 2014, mining comprised over 35 per cent of merchandise exports,²³ with large-scale mining operations accounting for approximately 65 per cent of production (Ghana Chamber of Mines, 2014; MinCom, 2015b; ICMM, 2015). While large-scale gold mining remains an important source of wealth creation and contributor to Ghana's gross domestic product (GDP), in recent years, the falling gold price²⁴ and liberalisation of mining codes in West African competitor countries have contributed to decreasing investment, lower production volumes and the mothballing of operations in which several thousand workers have been retrenched in the country (Mustapha, 2014). Set against this backdrop – and the International Council on Mining and Metals' long-term life-cycle projections of stagnating production volumes, sales revenues and expenditures for large-scale mining (ICMM, 2015) – the economic and development potential of Ghana's ASM sector, as elsewhere in the region, is garnering an increasing share of the spotlight. This increased focus on ASM thus presents a timely opportunity for the findings of the research to help feed into renewed policy debates and support the wider formalisation of the sector.

²³ In 2014 mining contributed 38 per cent of merchandise exports, of which gold contributed over 95 per cent of the total mineral exports (Ghana Chamber of Mines, 2014).

²⁴ The attractive gold price between 2010 and 2013, which reached a record high of around USD 1,900 per ounce in 2011, led to an increase in foreign direct investment in Ghanaian gold mining. The subsequent decreases to around USD 1,300 per ounce have slowed investment and production (ICMM, 2015).

Over the past two decades, ASM has continued to grow and today is one of the most important economic and livelihood activities in Ghana. While large-scale mining provides a source of employment for an estimated 16,000 people and supports a further 66,000 jobs indirectly (ICMM, 2015), its contribution to labour is dwarfed by ASM, which, as noted, directly supports over one million people and creates additional employment opportunities for as many as five million more in downstream industries and markets in the country. An estimated 70–80 per cent of which are estimated to operate informally (Crawford and Botchwey, 2016). In 1989, ASM accounted for only 2.2 per cent of Ghana’s total gold production; yet by 2014 this figure had increased to 35.4 per cent, totalling almost 1.5 million ounces of gold (Ghana Chamber of Mines, 2014; MinCom, 2015b). The size, importance and widespread informality of the sector in Ghana therefore provides fertile grounds for examining the complex functioning and challenges facing the sector in-depth. If mineral certification and formalisation efforts can work in a complex ASM landscape such as Ghana then there is greater potential for them to be adapted and replicated elsewhere in the region.

2.4.2 The policy context of ASM in Ghana

While the ASM sector in Ghana is very much ‘alive’ the country appears at a crossroads in policy and remains beset by a range of development challenges. Not least in respect to the framing of the sector as being populated by criminals and get-rich-quick entrepreneurs, and a litany of unimaginative, failed formalisation strategies that take a solely top-down approach that has so far failed to bring the majority of operators into the formal domain and harness the sector’s potential for socio-economic development while mitigating the negative impacts of activities. Despite a number of projects and programmes in the country aimed at bringing various stakeholders together to improve understanding of the sector, its importance in terms of job creation, as a potential springboard for national development, and that outline a roadmap for formalisation and change (McQuilken and Hilson, 2016), the anti-*galamsey*²⁵ rhetoric appears to have intensified in recent years. As Hilson and Hilson (2015, p. 20) spell out:

The Government of Ghana, and perhaps more surprisingly, advising donors, has not changed its tone on ASM in the past two decades, despite mounting evidence which links the unpredictable and seemingly-chaotic growth of activities to poverty and broader economic changes in the country.

As is the case elsewhere in the region, there is a clear need for more detailed information and broader conceptualisation on the workings of small-scale mining activities to inform more innovative support strategies, certification schemes, and evidence based formalisation initiatives in tune with the realities of the dynamics on the ground – much needed information which this thesis aims to provide through the GPN lens.

²⁵ *Galamsey* is the term used for informal artisanal miners in Ghana, and is an amalgamation and adulteration of the phrase ‘gather and sell’ (Tscharkert and Singha, 2007; McQuilken and Hilson, 2016).

A final point relates to Ghana often being at the forefront of mineral discussions and policy formation in sub-Saharan Africa, and the pre-existing fertile fair trade and mineral certification policy environment. As signatory to numerous mining related international and regional governance frameworks, such as the Kimberley Process Certification Scheme (KPCS, 2017), Extractives Industries Transparency Initiative (EITI), Minamata Convention on Mercury (UNEP, 2013); Africa Mining Vision (AMV) (AU, 2009); and the ECOWAS [Economic Community of West African States] Mineral Development Policy (ECOWAS, 2009), the country has made a commitment to support and formalise its ASM sector and is a part of global discussions. Ghana also has a history of Fairtrade schemes operating in the country producing a wide range of agricultural exports. For example, the Fairtrade certified Kuapa Kokoo Union established in 1993, supports over 87,000 small-scale cocoa growers (Fairtrade Foundation, 2018a) and the Akoma Cooperative Multipurpose Society, whose main export is shea butter, received Fairtrade certification in 2009 and has a growing base of over 400 all-female members (Fairtrade Foundation, 2018b). It is also the focus of mineral certification efforts already, with the NGO Solidaridad having been working with mining communities in Ghana's Western Region over a number of years to help them reach minimum criteria for certification (Solidaridad Network, 2014; Hilson and McQuilken, 2015). There is therefore considerable enthusiasm for launching certification schemes in the country, as well as the opportunity to travel to the mine sites and communities engaged with Solidaridad. With the caveat that ASM is a dynamic and highly context-specific activity, by using Ghana as a case study there is greater potential for analytical generalisability of the findings. As such, there is greater likelihood that the research outputs may be broadly applicable to other regions on the continent that have equally or less complex and embedded ASM production networks, and which are also in need of more innovative formalisation strategies and mineral certification schemes for the sector.

2.5 Conclusion

Artisanal and small-scale mining is an inherently *socially networked* phenomenon. The sector's impoverished operators and their communities are deeply embedded in largely informal *social networks* of production. This chapter has brought together multiple strands of the literature in order to frame this study of ethical mineral certification and its potential for the formalisation of the ASM sector in sub-Saharan Africa. It has drawn on a wide range of interdisciplinary research from development studies, business and management, economic geography, political economy, and certification, in order to synthesise these with the growing body of literature on ASM, and the extractive industries more widely. As a contribution to knowledge, it marks the first time many of these areas of the literature have been integrated in this way.

The chapter began by clearly demonstrating the importance of ASM to job creation, socio-economic development, and the livelihoods of impoverished rural communities throughout the developing world, and in particular sub-Saharan Africa. It has also shown the significance of the sector's contribution to the global supply of minerals and national economies where its activities are commonplace, and the wide variety of downstream and ancillary activities it has spawned. Crucially, the review outlined one of ASM's

most definitive characteristics from which a wide range of development challenges have spawned: its pervasive and widespread informality. With over 70 per cent of the sector deeply embedded in the shadow economy and tens of thousands of African operators now entrenched in cycles of poverty, it is this 'space' that policymakers must connect with to establish the formalisation platform needed for ethical mineral schemes to effect the transformational change and the empowerment of operators they claim to be capable of. However, while a rich body of ASM literature has grown over the past four decades characterising the sector and demonstrating its importance to the livelihoods of some of the world's poorest people, a deeper knowledge of the many – at times, overlooked – nuances of the rural landscapes where they are based and specificities of their local production networks is needed.

It is against this background that this thesis aims to broaden understanding of the demographics of ASM groups operating in rural sub-Saharan Africa, the dynamics of their operations and the intricacies of the local production networks they are a part of. It does this through the application of the adapted GPN framework that was developed in Section 2.3 and the analytical categories of embeddedness, empowerment, and value. This is the theoretical and conceptual framework of the thesis which is applied in Chapters 4 and 5 in order to address the overarching research question ('How can ethical mineral certification initiatives and formalisation strategies provide genuine transformational change for artisanal and small-scale miners in sub-Saharan Africa?'). Through mapping two strands of local gold and diamond production in rural Ghana, the thesis aims to provide a broader conceptualisation of the complexities and relationships forged between the key actors who populate ASM networks. It is this information, it is argued, which is needed to inform the design of formalisation and certification initiatives that are better connected to the realities and informal spaces on the ground

The following chapter outlines the 'worldview' of the thesis – the philosophical (ontological and epistemological) underpinnings that guide enquiry – and how this has shaped the research methodology, strategy and choice of methods used. It also discusses the limitations and introduces the case studies in greater detail. Three results and discussion chapters are then presented which reflect each of the research objectives in turn. Chapter 4 maps the macro-level processes of ASM governance in sub-Saharan Africa, and Ghana more specifically, in order to understand how this overarching mineral governance framework and opportunity structure has further embedded the sector and its impoverished inhabitants in the shadow economy. Chapter 5 focuses on the local level processes of trust and reciprocity operating in these mineral production networks, as well as the expressions of power and capture of value which is then used to produce detailed 'maps' of the key nodes of ASM activity at the case study locations. Chapter 6 then synthesises the key findings and discussion together in order to critically reflect on what these mean for formalisation and certification initiatives seeking to support and empower small-scale operators, and, subsequently, begins to develop a set of recommendations. The concluding chapter (Chapter 7) then summarises the contributions to knowledge, provides more specific recommendations for key stakeholders, and reflects on the research and potential avenues for future work.

Chapter 3 – Methodology

3.1 Introduction

This thesis is concerned with providing a more nuanced understanding of ASM activities and the workings of local production networks they are a part of. This level of detail is needed if more effective, pro-poor ethical mineral certification schemes and innovative formalisation strategies are to be designed and implemented for the sector. How can ethical mineral certification initiatives and broader formalisation strategies provide genuine transformational change for artisanal and small-scale miners in sub-Saharan Africa? (Table 3.1).

Table 3.1 Summary of research question, aim, and objectives

Research question	How can ethical mineral certification initiatives and formalisation strategies provide genuine transformational change for artisanal and small-scale miners in sub-Saharan Africa?			
Research aim	To broaden understanding of the demographics of ASM groups operating in rural sub-Saharan Africa, the dynamics of their operations and the intricacies of the local production networks they are a part of in order to provide perspective and policy recommendations to improve the design and implementation of for ethical mineral certification initiatives and formalisation strategies that are more in-tune with the realities of ASM on the ground.			
Research objectives	1. Critically reflect on why formalisation has proved to be so elusive by mapping and examining the overarching international and national mineral governance frameworks operating in sub-Saharan Africa, and specifically Ghana, as well as the activities of ethical mineral certification initiatives in the country.	2. Improve understanding of the dynamics of local ASM production networks, operators, and their experiences within the poverty trap by applying the adapted GPN framework to map and analyse the social networks of artisanal and small-scale gold and diamond production in Ghana.	3. Explore the potential and critically reflect on the utility of the GPN framework for generating new insights and knowledge by applying it to map local ASM production networks.	4. Provide specific and generalisable policy recommendations for improving formalisation strategies and ethical mineral certification initiatives in Ghana, as well as the wider sub-Saharan Africa region, that are more in tune with the realities of ASM on the ground.

This chapter outlines the philosophy underlying the thesis, which is used to inform the methodological design, research strategy and selection of methods. It justifies why this approach is undertaken and is sufficient and appropriate in answering the research question. First, the research ontology and epistemologies that form the overarching worldview – the combined philosophical system guiding inquiry (Table 3.2) – are outlined. Next, the methodology is outlined, the choice of the two embedded case studies of artisanal and small-scale gold and diamond production in Ghana are justified, and the various approaches often featured in qualitative research in the social sciences are detailed. Finally, the methods of data collection and analysis are outlined. This includes an analytical review of the literature and relevant policy documents and semi-structured interviews, supplemented with field notes. Data were analysed using a grounded theory approach that employed *a priori* and open coding techniques to explore predetermined GPN analytical categories, as well as allowed for emerging themes to then be identified from the data.

To summarise, the research holds an ontology of relativism and the related epistemologies of subjectivism and constructivism: there are multiple socially constructed realities, and knowledge is co-constructed through interpersonal interactions and shaped by contexts, thoughts, and perceptions. As

such a pluralist approach combining the anti-positivist worldviews of social constructionism, pragmatism and transformative change is taken. The methodology (research strategy) combines the GPN framework and a case study approach in order to build a rich picture of ASM activities. It has been designed to capture qualitative data through semi-structured interviews, complemented with field notes, and to move abductively backwards and forwards between theory, policy, and the lived experiences of impoverished ASM workers. This approach, it is argued, enables a more detailed understanding of the complex realities of ASM communities, from which to develop policy recommendations to refine mineral certification schemes and formalisation strategies so that they better reflect reality. To begin, it is instructive to first define and distinguish between some of the key terms used when discussing the methods of social enquiry and clearly illustrate how they are apply to the research (Table 3.2).

Table 3.2 Summary of the worldview, methodological approach and methods used in this thesis

Term	Definition and explanation	Position in thesis
Ontology 'What is the form and nature of reality?'	The philosophical study concerning the nature of reality (what exists, what it looks like, how its constituted and how these elements interact) upon which theory is based.	Relativism – there are multiple realities defined and socially constructed by individuals themselves that are relevant to that point in time.
Epistemology 'What is the nature of the relationship between the knower and the knowable?'	A branch of philosophy concerned with the theory of knowledge, in regard to the validity of the possible ways in which knowledge of reality can be gained. It concerns what can be considered acceptable knowledge (or 'fact') in a given field of research.	Subjectivism and Constructivism: - Knowledge is co-constructed, interpreted and depends on interactions. - There is a plurality of truths associated with different constructions of reality. - Thoughts, feelings, perceptions of people as told by them are subjective to the person and context.
Worldview 'What is the combined philosophical system guiding inquiry?'	Overarching philosophical system that comprises the ontology, epistemology and methodology of the researcher.	Combining the anti-positivist world views of: - Social constructionism - Pragmatism - Transformative change
Methodology 'How can the researcher go about acquiring that knowledge?'	The logical reasoning and justification of the choice and approach used in a given study. It is underpinned by and reflects the ontological and epistemological assumptions of the research and the potential and limitations of the use of different research methods.	Adapted Global Production Network framework with analytical themes of embeddedness (trust), power (empowerment), and value. Two case studies that map two strands of diamond and gold ASM networks in Ghana. Focus on specific contexts and conditions with findings that may be applicable to other similar situations through analytical generalisations as opposed to statistical representativeness.
Axiology 'What are the inherent values that influence the research?'	The values that shape the research. The shared co-created reality between the researcher, research participants and stakeholders are influenced by the inherent value systems of each person and by the context of the research setting. Objective research is maintained as being value free.	Implicit position from literature that small-scale miners are marginalised and that policy, certification initiatives and institutions need to be more understanding of and responsive to their needs. Position of researcher as a white, western male investigating ASM in post-colonial West Africa.
Methods 'Which precise procedures can we use to acquire it?'	The actual techniques and procedures to collect and analyse data. They are free from ontological and epistemological assumptions and the choice of use should be guided by the research question(s). Though particular methods are often associated with certain paradigms and fields of research.	- Literature review of ASM, certification, and GPN. - Analytical review of mineral governance structures in Ghana in relation to ASM. - Semi-structured interviews with wide range of ASM stakeholders. - Supplementary field notes. - Ethnographic methods (not ethnography <i>sensu stricto</i>) of observation and immersion in local context over eight months. - Grounded theory to generate analytical generalisations.

Sources: Guba and Lincoln (1994); Blaikie (2007; 2009); Grix (2002); Saunders et al., (2012); Creswell (2014); Lincoln and Guba (2016).

3.2 Philosophical framework: A worldview

The methodology is led by the philosophical assumptions and stance of the research as well as the social phenomenon and research question being investigated (Grix, 2002; Holden and Lynch, 2004; Blaikie, 2007; Saunders et al., 2012). A qualified understanding, explanation and positioning of these assumptions upfront helps guide the research design and comprehend the links between each stage of enquiry, examine the different theoretical debates and approaches to social enquiry more broadly, and justifies why the particular approach was taken in respect to others (Grix, 2002). This section of the chapter, therefore, sets out the philosophical assumptions that inform the research (Table 3.2). It distinguishes between the interlinked, yet separate, ontological and epistemological positions of the work and how they guide the chosen research strategy and qualitative methods of data collection and analysis.

3.2.1 Research ontology

Ontology concerns the nature of reality or the study of being (Crotty, 1998). It is the ‘starting point of all research, after which one’s epistemological and methodological positions logically follow’ (Grix, 2002, p.177). Broadly, ontological positions can fall into two mutually exclusive categories: realism and idealism. The former holds that reality exists externally and independent of social actors and as such, can be measured objectively. It is most associated with positivism or post-positivism and quantitative research methods. Positivist research therefore searches for universal truths or facts to explain reality. At the other end of the spectrum is the latter, which holds that reality is socially constructed in the minds of social actors through their perceptions and experiences.

While these two opposing ontological positions have long been debated by academics, the most contemporary debate in the social sciences is concerned with the derived ontological positions of the critical realist vs. relativist: essentially whether there is a single external reality *or* if multiple realities that are socially constructed (Diesing, 1966; Blaikie, 2007; Maxwell, 2012; Levers 2013). The philosophical framework of this research takes the ontological perspective of relativism (the relativist position): ‘social reality is relative to the individuals involved and to the particular context in which they find themselves’. This means that by changing the individuals or context (or both) the social reality itself is changed (Lincoln and Guba, 2016, p. 39). Research grounded in relativism aims to understand and capture the subjective nature of the meaning, interpretation, values and context of the social entity being researched most often through qualitative or mixed research methods (Diesing, 1966; Crotty, 1998; Raddon, 2016; Saunders et al., 2012; Levers, 2013). In short, the social world is seen as being relative to the person experiencing it and the context within which it sits. This view therefore places an emphasis on the African socio-economic context and culture that ASM activities take place within. This is important given the assertion made in Chapter 2 that the mineral certification schemes under investigation appear to have overlooked the African context having based the design of their schemes on experiences from work with communities in Latin America, and, second, because of the focus on the local embedded social relations in ASM production networks.

The ontological position of relativism also fits with the broad philosophical and theoretical approaches that typify research and thinking in development studies today – characterised by what Creswell (2014:38) describes as the ‘transformative worldview’. As the following section explains, the relativist ontology adopted fits much of the contemporary philosophical thinking in development studies, and is also the most appropriate to the exploratory nature of the research.

3.2.2 Research epistemology

Epistemology is concerned with what constitutes acceptable knowledge and the ways in which it can be obtained and verified – the relationship between the researcher and what is being researched. However, as Crotty (1998) makes clear, while ontology and epistemology are distinct terms with specific meanings, when discussing the philosophical assumptions in social research the two are often taken together to constitute what is variously termed as the philosophical worldview, set of beliefs, assumptions, or perspectives that inform the methodological approach (Crotty, 1998; Blaikie, 2007; Saunders et al., 2012; Creswell, 2014). Though it is beyond the scope of this thesis to delve into the history, development and multiple origins of these interlinked perspectives of social science research, a brief overview of each serves to explain and justify the use and impact of the worldview adopted.

As Table 3.2 at the start of this chapter summarises, this thesis rests on the assumptions of anti-positivist research philosophies, mainly social constructionism while also drawing on elements of pragmatism and holding certain axiological values of the so-called transformative worldview (Creswell, 2014). This plurality of perspectives and ‘blurring of genres’ has become an increasingly accepted approach to interdisciplinary social research (Geertz, 1980; Denzin and Lincoln, 2005; Lincoln and Guba, 2016). As such, this thesis maintains an overarching epistemological perspective combining constructivism and subjectivism: first, that knowledge between the researcher and participant(s) is co-constructed as well as being dependent upon the particular context in which the interaction takes place and how the researcher interprets it; and second, that that interaction is highly-dependent upon the subjective notions of both the researcher and research participant(s), such as prior experience and knowledge, political and social status, gender, race, class, culture and history. This worldview, therefore, takes into account the role that ethnicity and kinship play in the formation and functioning of trust-based partnerships in informal socio-economic transactions, which, as reviewed in Chapter 2, are theoretical notions that may help better understand and explain the workings of multidirectional lattices of ASM production.

The impact of this epistemological position on the thesis is that social research should therefore aim to understand society through the perspective (multiple complex realities) of the individuals that experience it (Blaikie, 2007; Creswell, 2014; Lincoln and Guba, 2016). As such, and implicitly, given these assumptions, knowledge is derived from understanding specific contexts and cultural settings, and from speaking (interacting) directly with social actors in order to understand the meaning, thoughts, feelings, and opinions, as expressed through the words of informants themselves. This type of information is best obtained through qualitative research methods. It is the intent of the researcher to then interpret and

make sense of this co-created qualitative knowledge to form new knowledge, identify patterns of meaning, and better understand the complexities of the social world (Creswell, 2014) – as is undertaken in this thesis through the adapted analytical framework of the GPN (after Henderson et al., 2002).

The second and related philosophical perspective this thesis prescribes to is pragmatism, which places emphasis on research that has relevance to, and impacts on, society and/or on the social actors under examination (see Peirce (Atkin, 2016); Dewey (Field, 2016); Mead (Cronk, 2016); Blaikie, 2007; Morgan, 2007; Saunders et al., 2012; Creswell, 2014). Crucially, pragmatism rejects the positivist epistemology of objectivism and instead sides with the constructivism and subjectivism epistemologies outlined above (Quine, 1953; Davidson, 1974; Rorty, 1980 – after Cherryholmes, 1992; Crotty, 1998). Though pragmatism has an ontology of realism, it is more concerned with how one can know that the picture of reality generated *is* reality – conceding that there is no way to know (House, 1991; Cherryholmes, 1992). Methodologically, pragmatism is, therefore, concerned with applications and solutions to problems, and the consequences of research. As such, it emphasises a focus on the research problem at hand and using the most appropriate methodology and method(s) that fit rather than elevating certain approaches or methods over others (i.e. the qualitative vs. quantitative split often found in social science research). This also provides greater freedom when designing research, provided that the outputs and outcome are useful and valid (Creswell, 2014). In the case of this thesis, a somewhat pragmatic approach was judged suitable given its highly-applied nature, the aim of developing more effective ethical mineral certification schemes and formalisation initiatives for impoverished small-scale miners, and practicalities associated with undertaking research in developing countries (after Desai and Potter, 2006).

A final feature of pragmatism that is of relevance to this thesis is that the axiology of pragmatic research is not value-free but instead seeks to address perceived research problems and issues in society more broadly:

Pragmatic choices about what to research and how to go about it are conditioned by where [researchers / society] want to go in the broadest of senses. Values, aesthetics, politics, and social and normative preferences are integral to pragmatic research, its interpretation and utilization (Cherryholmes, 1992, p. 13).

Importantly, this stance not only fits with the position implicit in the research question and literature review, namely, that ethical mineral schemes are *not* effecting transformational change, nor empowering small-scale miners in ways their proponents variously claim that they are (Maldar, 2011; Hudson et al., 2013; Fairtrade Foundation, 2016c; McQuilken, 2016). But it also fits with the ‘transformative worldview’ of research that is the final theoretical perspective this thesis prescribes to given that: ‘*How* questions are concerned with intervention’ (Blaikie, 2010, p. 10).

Described by Creswell (2014, p. 38) as research that focuses on issues such as power, social justice, and marginalisation in society, the transformative worldview emerged in the late 1980s and 1990s to drive a more radical change agenda in social science research. It can, therefore, be considered to fit into the 'radical humanist' quadrant in the Burrell and Morgan (1979) classification of sociological paradigms: as an anti-positivist, postmodernist perspective that emphasises the importance of challenging existing social arrangements and a critique of the *status quo*. Though not constituting a uniform body, the literature is shaped heavily by the idea that social inquiry should be intertwined with politics and affect social change, drawing on the works of critical theorists, political economists, economic geographers, feminists, participatory action researchers, Marxists and postcolonialists (Freire, 1970; Rowlands, 1997; Creswell, 2014). Epistemologically, transformative worldviews see knowledge as subjective and may invoke participatory methods to develop the research alongside the perceived marginalised participant from the outset. The axiology of transformative and critical theory research is thus more than value-laden and driven by the personal belief systems and constructs of the researcher and their participants (Lincoln and Guba, 2016).

This worldview, which comprises social constructionism, pragmatism and the transformative perspective, is maintained here for several interrelated reasons that also challenge the use of an opposing approach. First, as the literature review demonstrates, ASM activities and poverty are context-specific, complex, multidimensional, dynamic through time, and concern issues of inequality and empowerment (Rahnema, 1992; Birdsall and Londño 1997; Sen, 1999; David, 2004; Green and Hulme, 2005; Desai and Potter, 2006; Willis, 2011; McQuilken and Hilson, 2016). Inherent with these points are the assumptions that the reality in which social actors exist is subjective and socially constructed. When applied to the present investigation, no one universal formalisation policy, singularly-focused poverty alleviation strategy, or certification scheme will have the same impact in every region, state, or community. Second, from the outset of the research, it is clear that there is an inherent axiological position that sides with the transformative worldview and an implicit pragmatic approach in both the research question and aim of the thesis: to explore how to better support marginalised small-scale miners through certification. Within this statement there is also the assumption that the current system that governs ASM activities are not fixed or external to reality but are instead socially constructed and can therefore be changed. Finally, the philosophical worldview of this thesis can be further justified by invoking the question: 'why not positivism?' The answer, in short, is because a positivist (or post positivist) approach is incommensurate with the worldview of the researcher and with the research question, aims and objectives of this thesis.

However, the adoption of an anti-positivist worldview in this thesis does not equate to an outright rejection of positivist traditions or research. The scientific method is indeed an appropriate and useful tool for exploring the physical and natural world though not so for sociological inquiry (Lincoln and Guba, 2016, p. 39). This is exemplified by the highly multi- and interdisciplinary nature of ASM research to date which comprises studies from a wealth of academic fields and thus an equally broad continuum of philosophical traditions (Table 3.3). For example, the work from traditionally positivist and hard science disciplines (Biglan, 1973) has been instrumental in providing evidence for the ways in which mercury use

in small-scale mining activities is detrimental to health (Taylor et al., 2005; Saldarriaga-Isaza et al. 2013) as well as engineering equipment for the safe and more efficient processing of mineral ores on a small-scale such as retorts, gravity separation tables and sluices. Yet, the ASM literature is also replete with examples where a poor understanding of the fine social detail and knowledge of the local context has led to the failure of these types of technical interventions and unintended negative impacts (Hentschel et al., 2002; Hilson, 2007; Childs, 2008; Hilson and Hilson, 2015).

Table 3.3 ASM research and publications from a range academic fields

Academic discipline	Journal title	Example publication
Psychology / Behaviour Science	Procedia – Social and Behavioural Sciences	Visaya-Ceniza (2013)
Medicine/Health and Environment	International Journal of Hygiene and Environmental Health	Bose-O'Reilly et al., (2008)
Environmental Science & Management	Environmental Research; Science of the Total Environment	Hilson et al., (2007); Van Straaten (2000)
Earth Sciences (Geology, Geochemistry, Geobiology)	Ecotoxicology and Environmental Safety; Applied Geochemistry	Leiva and Morales (2013); Li et al., (2012)
Engineering Governance, Natural Resources Policy, Agriculture	Journal of Cleaner Production; Resources Policy; Natural Resources Forum; Land Use Policy; Journal of Rural Studies	Jönsson et al., (2009) Banchirigah (2006); Hilson (2002a; 2002b; 2002c); Maconachie and Binns (2007)
Economics, Trade Politics, Geography	Geoforum; Ecological Economics Political Geography	Hilson (2008); Spiegel (2009) Hilson and Yakovleva (2007)
International Development	Journal of Modern African Studies; African Affairs; World Development; The Journal of Development Studies; Journal of International Development; Development and Change; International Development and Planning Review.	Hilson et al., (2013); Hilson et al., (2007); Spiegel (2012); Hilson and Van Bockstael (2012); Kamlongera (2011); McQuilken (2016)
Extractive Industries	The Extractive Industries and Society	Hilson and McQuilken (2014)
Multidisciplinary, Futures Anthropology	Futures Annual Review of Anthropology	Hilson (2002d); Davies (2013) Ballard and Banks (2003)

Note: This is not an exhaustive list but aims to provide a snapshot of the multi- and interdisciplinary nature of ASM research and the range of academic and associated philosophical (ontological and epistemological) baggage attached.

The implications of this worldview (the combined ontological and epistemological positions) are that it necessitates the development of a research design that enables an examination and appreciation of the 'fine detail' of multiple realities (Silverman, 2011, p. 9): the individualised experiences of people, and the socially constructed formal and informal governance structures and 'ways of doing' in localised ASM production networks. This qualitative information is needed if more effective and context-specific certification initiatives are to be designed, and pragmatic policy recommendations are to be implemented.

3.3 Research methodology

The methodology of a given piece of research is ‘the strategy, plan of action, process or design lying behind the choice and use of particular methods and linking the choice and use of methods to the desired outcomes’ (Crotty, 1998, n.p.). As explained in Chapter 2, this thesis adapts and mobilises the GPN as an analytical framework in order to explore, better understand, and build a broader picture of the complex functioning of ASM. Building on conceptual origins and theoretical underpinnings of the GPN outlined in Chapter 2, this section of the chapter outlines how it was applied in practice to map two nodes (forming two case studies), namely gold and diamond production in Ghana (Objectives 2 and 3). The GPN framework is a powerful analytical tool that is able to provide a broad conceptualisation of the complexities of, and relationships forged between, the key actors who populate ASM networks.

3.3.1 The case study

The process of designing case study research that is robust, valid and reliable and follows a rigorous methodological path is highly challenging: ‘using case studies for research purposes remains one of the most challenging of all social science endeavours’ (Yin, 2009, p. 3). It is therefore imperative to be aware of the inherent strengths, and indeed limitations, of the case study as a research strategy by which to mobilise the GPN framework, from the outset. Fitting with the worldview and aims and objectives of this thesis, the case study is an *in-depth* and *detailed* method of inquiry used to examine *contemporary complex* phenomena that the researcher has little or no control over (Casley and Lury, 1987; Bryman, 2004; Berg, 2009; Saunders, et al., 2012). These strengths of the case study approach are further fortified by its applicability to explore ‘how’ and ‘why’ research questions concerning events over which the researcher has none or limited control (Yin, 2009), which applies here.

Yin (2009, p. 14) offers a comprehensive explanation that further cements the use of a case study approach to mobilise the GPN framework. First, the author establishes the case study approach as a ‘distinctive form of empirical inquiry’ and exploratory tool used for in-depth investigation of contemporary phenomenon that is deeply situated within its context. Indeed, the phenomenon of interest may be so embedded in institutional structures and the socio-political landscape that the boundaries between the phenomenon and context are not clearly apparent (Yin, 2009). This first part of the definition justifies the use of a case study for the research, given the assertion, contended in Chapter 2, that ASM is an inherently networked, embedded and context-specific socio-economic activity.

Second, the case study method has several distinguishable elements from other research methodologies: there are numerous variables of interest rather than singular data points, it uses multiple sources of evidence that are triangulated for explanatory power, and, it is underpinned by the prior development of theoretical prepositions to guide data collection and analysis (Yin, 2009). These defining features are present in the research: 1) by using the adapted GPN framework the research focuses on the pre-determined theoretical categories of embeddedness, power, and value as well as themes that arose

through the fieldwork and were later incorporated into the literature review (e.g. trust); 2) it uses multiple sources of evidence (semi-structured interviews with a range of stakeholders and experts, review of policy documents, existing academic and 'grey' literature, websites and annual reports of key regulatory organisations, mineral production and export data); and 3) it aims to gain an in-depth understanding of the institutions, regulations and socio-economic processes that govern small-scale mineral production within Ghana and the subjective, individualised experience of the people involved by specifically focusing on two nodes of the overall ASM network.

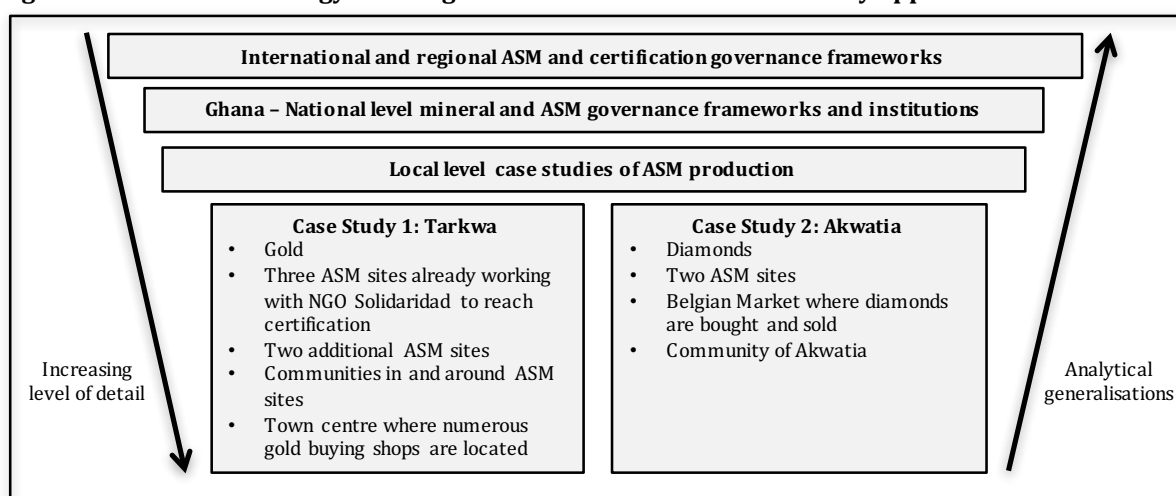
The sampling strategy employed is also important in case study research. Crucially, in qualitative research, case studies are selected on the basis of their ability to explore in-depth phenomena and make analytical generalisations to wider contexts and settings. This is opposed to statistical generalisations in quantitative case study research, which concerns the ability to apply findings to wider populations based on a statistically representative sample. The implications are that case studies in qualitative research can be purposely selected in order to explore theoretical ideas and provide new or improved understandings of the phenomena under investigation that may also be applied to other settings and contexts (Miles and Huberman, 1994; Curtis et al., 2000; Onwuegbuzie and Leech, 2007). The selection of the case studies here was made on the basis that they could be used to explore and map both gold and diamond production, allowing for cross comparison as well as to develop analytical generalisations regarding the ability of ethical mineral certification schemes to support the wider formalisation of the ASM sector in sub-Saharan Africa.

3.3.2 Research strategy

The research strategy is distilled in Figure 3.1 and further elaborated upon and justified here. Using Ghana as the overarching *holistic* case study (Yin, 2009; Saunders et al., 2012) for the reasons outlined in Chapter 2 (Section 2.5), the research focused on the national level actors located in the country capital of Accra as well as two main localised ASM locations: 1) the gold mining town of Tarkwa in Ghana's Western Region; and 2) the impoverished town of Akwatia in the Eastern Region, which, as indicated, accounts for almost all diamond mining in the country. Essentially, these towns formed two *embedded* case studies (Yin, 2009; Saunders et al., 2012), with the range of local level actors and artisanal and small-scale mine sites in each locale forming further embedded case studies and representing nodes of ASM production. Given the exploratory nature of the research and focus on the qualitative experience of artisanal and small-scale miners, the general strategy employed an abductive approach aimed at generating theory from data (inductive) while also allowing for the predetermined analytical categories of the GPN (deductive) to be explored in greater detail. In taking this approach, the fieldwork followed the multidirectional network of gold and diamond production from mine sites to local markets and trading centres within each town, and from there to Accra, where the minerals are bought, sold and further processed for export. This approach therefore aimed to capture the formal and informal governance frameworks at all levels of the network of supply (embeddedness) and capture the details of the

horizontal movement of minerals and exchange of socio-economic activity at the local level (exploring the notions of empowerment and value outlined in Chapter 2).

Figure 3.1 Research strategy showing holistic and embedded case study approach



3.3.2.1 Preliminary fieldwork

Preparation for the main fieldwork began following a one-month reconnaissance visit to Ghana in July/August 2014 with a group comprising one Masters student, one other PhD researcher and two experienced academics. The visit proved to be highly useful, helping to inform the design of the main research phase, notably providing the opportunity to engage with key stakeholders (such as government officials, academics, and representatives from mining organisations), which facilitated access and secured requisite permissions; connect with well-known and experienced fieldwork assistants; visit both Tarkwa and Akwatia to identify potential field sites; identify practicalities concerning transport, budget and accommodation; gain experience with interviewing and to 'road-test' the adapted GPN framework. The visit also provided the opportunity to acquire first-hand experience with undertaking research in Ghana, gain a high-level view of the overarching mineral governance framework and key institutions, as well as familiarity with the social and cultural context. Throughout the visit, a fieldwork diary was kept, enabling the researcher to record and reflect on what was learnt, and refine the research methodology, including the semi-structured interview template (Appendix 2). The visit also provided the opportunity to present preliminary research on empowerment and gold certification schemes from the literature review (McQuilken, 2016) at the *3rd Biennial Intercontinental Mining and Mineral Conference* held at the University of Mines and Technology (UMaT) in Tarkwa. This generated feedback on the relevance of the research project and facilitated new connections with academics and officials from several large-scale mining and civil society organisations working on ASM challenges, which proved to be useful later on.

3.3.2.2 Main fieldwork: Phase 1

Having obtained a 'favourable ethical opinion' for the research project from the University of Surrey Ethics Committee in December 2014 (Appendix 3), the main fieldwork for the research was undertaken in two stages over a period of eight months (between February 2015 and December 2015). First, a

scoping study spanning one month (February to March 2015) was conducted, beginning with two weeks in Accra where the key national level ASM stakeholders are located, to map the overarching mineral governance of the sector and interview its main stakeholders. These national level stakeholders were identified through non-probability sampling by drawing on the experience and introductions from the preliminary visit to Ghana in July/August 2014, academic literature and secondary sources of data such as the websites of key government and non-government organisations on which their roles and regulatory reach are outlined, as well as mineral governance legislation and policy documents.

The research began with the Minerals Commission, the main promotional and regulatory body for the mining sector in Ghana, responsible for regulating and managing mineral resources, and coordinating and implementing mining-related policies (McQuilken and Hilson, 2016). This was important, helping to secure the necessary buy-in and permission for the research (Appendix 4), identify additional national-level stakeholders to interview, and develop a sampling framework that included all of the main national-level institutions and organisations relating to ASM activities. Additional national level stakeholders interviewed (identified both purposely and through snowball sampling) included: civil society organisations, mining companies, and officials from a range of mining and non-mining related institutions.

Undertaking these interviews with national level stakeholders was important for several interrelated reasons. First, it provided the opportunity to ask about key legislation, policy documents and production data and obtain hard or soft copies where they were difficult to find online or had not been made fully publicly available. The approach also ensured buy-in for the research at the highest level (the gatekeepers) and enabled the researcher to ask participants to introduce them to other stakeholders. For example, the Minerals Commission operates nine district ASM offices throughout the country, one of which is located in Tarkwa, to assist current and prospective miners with acquiring a licence and improving their activities, as well as monitoring operations and enforcing legal frameworks. Speaking with high-level officials in the Minerals Commission headquarters in Accra, therefore, ensured that officials at the district offices would cooperate with interviews, assist with identifying mine site locations and local stakeholders to interview, and facilitate the research where needed. This buy-in was also important for the safety of the researcher, given the sensitive nature of ASM activities in the country, owing to its widespread informality and illegality. The initial interviews with national-level stakeholders, such as officials from Fairtrade Africa and Solidaridad, both of which have offices in Accra, also assisted with identifying potential study sites. The latter, for example, has been working with five ASM organisations since 2014, helping them reach the minimum pre-requisites for Fairtrade and/or Fairmined certification (Hilson and McQuilken, 2016, p. 202). It was crucial that a selection of these sites be visited given the focus of the thesis and nature of the research question. The relationship built also enabled the researcher to use Fairtrade Africa's office space as a base from which to conduct desk research, facilitating a business-like relationship that enabled regular interviews with officials, as well as informal interactions, and increased the potential for the research findings to have an impact and be of use to the organisation.

Following the two weeks spent in Accra, the researcher returned to Tarkwa and Akwatia for one week each in order to begin to map the local level ASM governance framework, gain access, and identify key ASM sites and communities to speak with. Mirroring the approach taken with the national level interviews, stakeholders were first identified through purposeful sampling and then snowball sampling. This approach continued in phase two of the main fieldwork.

3.3.2.3 Main fieldwork: Phase 2

Returning to Ghana in May 2015, fieldwork was conducted in Tarkwa for three months (May to July 2015). This was followed by a brief hiatus out of the country in August 2015 and then one month (September 2015) spent researching for a different ASM project in Ghana, which involved speaking with national-level actors and representatives from ASM communities in other parts of the country (see McQuilken and Hilson, 2016). The insights gained and time spent researching and analysing ASM challenges from this work assisted with providing a more in-depth understanding of the functioning of the sector's governance framework and production network in Ghana. It also helped with identifying additional stakeholders to interview as part of the PhD thesis. Fieldwork activities for the PhD research then resumed in Akwatia for several weeks in September 2015 and again from October to November 2015. From May to November 2015, multiple trips were made to Accra, during which time the opportunity was taken to revisit and interview national-level stakeholders.

In both Tarkwa and Akwatia, purposely-selected ASM sites, gold and diamond dealers, traditional authorities, and the communities in the surrounding areas (along with a range of local stakeholders identified through snowball sampling) were visited multiple times over a period of several months (see Section 3.3.2.4 for the study site selection rationale). The aim was to speak first and foremost with artisanal and small-scale miners as well as local level actors to obtain in-depth qualitative data regarding their experiences and to understand the vast array of roles undertaken at mine sites and the network embeddedness, to capture details on power and value, as well as pinpoint the multidirectional movement of minerals through the production network (Objectives 2 and 3). While the research did not seek to follow an ethnographic methodology *sensu stricto*²⁶ it did draw on elements of ethnographic research methodology. These included observations captured through field notes; analysing in-depth case studies; taking an exploratory, open approach; the extended length of the fieldwork; and the time spent living in and amongst ASM communities in Tarkwa and particularly Akwatia, which is much smaller and more rural. This was an intended part of the research strategy for a number of reasons. First, it enabled the opportunity to better understand the socio-cultural context in which ASM activities take place and in doing so, 'appreciate the value (and ultimately the beauty) of the fine details of mundane existence' (Silverman, 2011, p. 9). This was important given the position of the researcher as a Western male with limited experience researching in West Africa prior to the PhD project and thus crucial to understanding

²⁶ Hailing from Anthropology, ethnography follows a distinct methodological path that includes detailed and systematic observation, an open approach that avoids framing the research situation and questions beforehand, uses detailed in-depth case studies and often focuses on singular events to examine principles of social organisation, and tries to understand the society from the inside often by living amongst the community of interest for extended periods of time (Desai and Potter, 2006; Marshall, 2006).

the functioning of ASM activities (as much as possible) from the perspective of miners and communities themselves: taking a critical approach without prior judgement and again complementing the exploratory nature of the research and worldview of the thesis. Furthermore, in terms of appreciating the ‘fine detail’, the length of time spent embedded in the community allowed for the observation and facilitated a better understanding of some of the more hidden labour processes that form the very lowest levels of activities and extremities of the ASM production network. For example, in Akwatia during early morning exercise runs through the town, women were often observed processing the tailings of ASM activities for diamonds outside their houses. Moreover, while walking through the town with one of the main research assistants, who also hails from Akwatia, it was observed that he would often be approached by men for small loans (approximately GBP 1 to 2) of ‘chop’ money, which would be used to buy food on the condition that they would sell him any diamonds they found as they walked the concession of the resident large-scale mining company (the so-called ‘road-pickers’ – Chapter 5, Section 5.3.3, Table 5.6). These observations meant the researcher could return at a later date to approach and interview people undertaking these labour roles in the local production network that may have otherwise gone unnoticed.

Second, the extended period of time allowed for multiple visits to the same mine sites and communities to take place over several months, which was necessary to build rapport and trust with miners (many of whom were working informally). This increased the *internal validity*²⁷ of interviews. The multiple visits also enabled emerging themes, observations and responses from participants to be explored in greater detail and triangulated with other interviewees, again increasing the internal validity of the qualitative data. Third, as the research progressed, it transpired that at all ASM sites in Tarkwa and Akwatia mining featured three-week cycles. Again, the length of time spent in the field ensured that all stages of the mining cycle could be captured and better understood as different stakeholders and labour activities were present at different times (e.g. landowners and sponsors were only present at some ASM sites at the end of three-week cycle when the bags of gold ore were loaded and removed from the mine site for processing). Finally, the extended length of time spent in-country enabled networking to take place with civil society organisations conducting ASM-related projects in Ghana, in turn, facilitating a deeper understanding of the mineral governance framework and access to additional stakeholders. For example, the researcher was invited to attend two multi-stakeholder workshops being run by the NGO, Friends of the Nation Ghana (FoN) in Tarkwa (July 2015) and Accra (October 2015) regarding the ratification and early implementation of the Minamata Convention on Mercury (UNEP, 2013), which includes measures for the elimination of mercury in ASM.

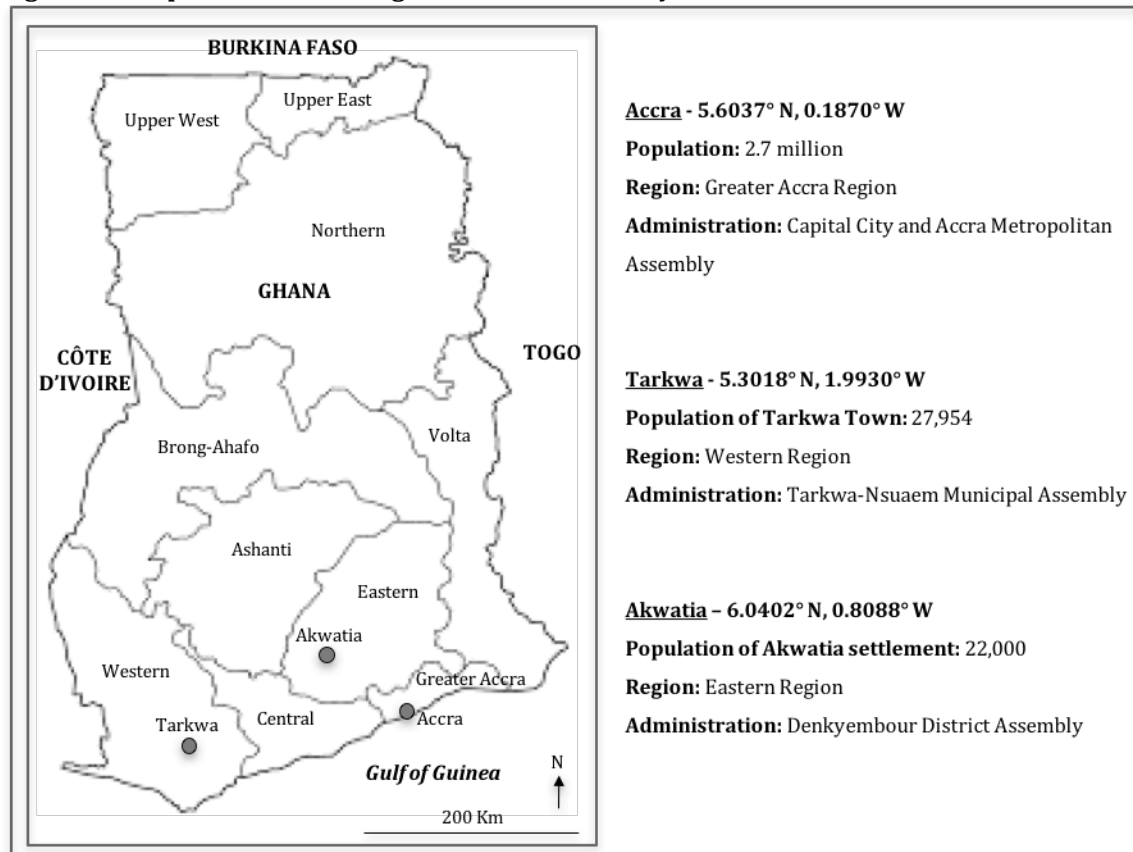
3.3.2.4 Study site selection

The study site locations are shown in Figure 3.2. Presenting the study site selection criteria upfront increases the *reliability* of the study in terms of its replication under similar circumstances as well as the *external validity* – the extent to which the ‘thick description’ (findings) of a purposely selected sample in a

²⁷ Internal validity refers to the credibility and trustworthiness of the data (interviews, observations, interpretations and generalisations) which can be established by sufficient time with participants and in the social context to check for distortions as well as triangulation and checking with other data sources and participants (Rudestam and Newton, 2007).

particular context can be transferred and generalised to other situations (Geertz, 1973; Rudestam and Newton, 2007). Selection of the case study areas as well as the mine sites was based on six criteria for qualitative sampling strategies: 1) relevance to the conceptual framework and research question being addressed; 2) likelihood to generate rich information on the phenomena under investigation; 3) potential to enhance analytical generalisability of findings; 4) ability to produce believable and reliable explanations making findings valid; 5) ethical considerations regarding informed consent and any risks to the researcher and researched; and 6) feasibility (Miles and Huberman, 1994; Curtis et al., 2000).

Figure 3.2 Map of Ghana showing location of case study sites



Map data: Ghana Statistical Service (2014a; 2014b).

Tarkwa

Located in Ghana's Western Region, Tarkwa and surrounding villages have a long history of large-scale and artisanal and small-scale gold mining. It is recognised as the centre of gold and manganese mining in the country (Hilson, 2001; 2002c). It is also home to several key local government institutions, including, as noted earlier, one of the Mineral Commission's nine district ASM offices, a local gold buying office of the government-run Precious Mineral Marketing Corporation, offices and departments of the Tarkwa Nsuaem Municipal government, and the University of Mines and Technology (UMaT). In addition, there are two large-scale gold mines in the locality, both of which have a history of interactions with artisanal and small-scale miners working on and around their concessions: 1) the Tarkwa Mine, located in Tarkwa itself and operated by Gold Fields; and 2) the Iduapriem Gold Mine, which is located 10 km south-west of

Tarkwa and operated by AngloGold Ashanti (Gold Fields, 2018a, 2018b, 2018c; AngloGold Ashanti, 2017). Due to its prominence, Tarkwa is therefore a highly relevant, important and dynamic node of the artisanal and small-scale gold production network in Ghana, and as such is a case from which study findings are generalisable. As a case, it provides a unique opportunity to map and explore the multitude of stakeholders involved and the challenges that they face in greater detail.

Furthermore, in terms of specific mine site selection and relevance to the conceptual framework, objectives and research question of the thesis, Tarkwa is the location of three out of five artisanal and small-scale mining cooperatives in Ghana working with the NGO Solidaridad to meet minimum criteria to become Fairtrade and/or Fairmined certified (Table 3.4). These mine sites were therefore purposely selected and visited on multiple occasions over the course of the fieldwork. Two additional ASM sites (identified through snowball sampling by speaking with officials at the Minerals Commission district office) and the impoverished communities located adjacent to these pilot sites were also selected, given their interconnected mineral production network, and to explore any discernible differences or similarities between the Solidaridad pilot sites and non-pilot sites.

Table 3.4 Ghana-based small-scale gold mining cooperatives with which Solidaridad has forged partnerships

Mining association	Number of miners	Population of surrounding community	Target year of certification	Total annual production 2014 (kg)
Dakete and Company Ltd. (Tarkwa, Western Region)	270	1,950	2015	14.5
Nana Yefri Mining Group (Tarkwa, Western Region)	340	1,500	2015	36
Kyereyiaman Cooperative (Tarkwa, Western Region)	260	9,00	2016	36
Golden Resources Group (Obuasi, Central Region)	220	1,250	2016	72
Malibu Gold Resources (Obuasi, Central Region)	225	1,000	2016	72

Source: Solidaridad (2014)

Akwatia

First and foremost, Akwatia was purposely selected as a case study due to its long history and importance as the centre of Ghana's diamond production. It has accounted for over 90 per cent of all diamonds mined in the country since the 1920s, and is home to a vibrant, albeit impoverished, community of approximately 22,000 people (Greenhalgh, 1985; Chirico et al., 2010; Ghana Statistical Service, 2014a, p. 70). As the key local node of diamond production in Ghana, the purposive selection of Akwatia as a case study through which to explore the potential of mineral certification schemes for ASM was essential, given the contention made in Chapter 2 that there is a need to focus on both gold and diamonds to increase the applicability and impact of the research. Mapping both gold and diamond production in detail also increases the external validity of the findings by being able to compare the networks of ASM production for different minerals and thereby increase understanding of the overall ASM governance framework and how it is applied in practice, as well as the generalisability of the findings to other contexts where diamonds and/or gold are mined.

Second, the main research assistant for the fieldwork hails from Akwatia and has lived there since birth for over 40 years. The assistant has an in-depth, detailed and historical knowledge of diamond mining in the town and is extremely well-networked in the community (see section 3.5 for a discussion on power relations between researcher and participant), therefore making access easy and also eliciting more detailed and honest responses as trust existed with participants from the outset of the interviews. It also meant that participant responses and any clarifications were crosschecked with the research assistant afterwards. This proved to be extremely useful when it came to sketching out all of the functions of the GPN at the local level through ongoing discussions during the fieldwork, as well as an afternoon spent discussing the fieldwork and network at the end of the research period.

The selection of specific ASM sites in Akwatia was undertaken through snowball sampling. In total, two sites were visited regularly over the three-month fieldwork period. At the time, only a handful of sites were actively mining, reducing the possible size of the sample. However, as the proceeding chapters demonstrate, ASM-related activities are found throughout every corner of Akwatia town and as such, the researcher was immersed 24-hours a day in the production network, making for highly-detailed data collection.

In summary, the research strategy employed a holistic case study approach focussing on Ghana, a country with a burgeoning and largely-informal ASM sector, and two embedded case studies of gold and diamond production in order to map the production networks in these locales in great detail. These in-depth case studies, representing nodes of production, enabled the development of broader insights into the functioning of ASM at the local level and potential of mineral certification schemes to address many of the sector's aforementioned socio-economic challenges.

3.4 Research methods

This sub-section outlines the specific methods used to collect and analyse the data for this thesis. It also outlines the importance of ethics in the research process, and the inherent limitations and risks involved, and how these were incorporated, accounted for and mitigated in the research design.

3.4.1 Data collection

The research collected new primary qualitative data through semi-structured interviews. It also collated existing secondary qualitative and quantitative data regarding the mineral governance frameworks, roles, responsibilities, and functioning of government and regulatory institutions at both national and local levels, and mineral production statistics. This rich data were used to gain an in-depth understanding of the local functioning of two nodes of ASM production embedded within the wider mineral and social governance of the sector.

3.4.1.1 Primary data

Semi-structured interviews were the main research method and primary data source used to elicit detailed personalised perspectives on the functioning of ASM production. Semi-structured interviews were deemed the most appropriate, given the exploratory nature of the research and need to capture qualitative data on the three analytical categories of the GPN framework; it also allowed for additional themes and ideas to emerge. The aim of these interviews was to improve understanding of the dynamics and functioning of the ASM production network, and to map the socio-economic processes and multidirectional chain of supply at the local level, as well as ASM operators and communities, and their experiences within the poverty trap. Having purposely selected key stakeholders, a snowball sampling strategy was then used to identify additional key stakeholders to speak with as well as specific small-scale mine sites. This enabled more themes to be drawn out, to gain access through key gatekeepers, as well as to identify hidden roles and labour processes that were not identified through the literature review or available through existing secondary data sources.

There are several important aspects and advantages to using semi-structured interviews, which have been widely used in many studies on ASM (Levi and Linton, 2003; Hilson and Potter, 2005; Tschakert and Singha, 2007; Tschakert, 2009). The semi-structured nature enables the researcher to be flexible, in this case, helping to focus questions on the predetermined analytical themes of the GPN framework but also enabling flexibility in participant answers and further corresponding questions. The flexibility of the conversation is advantageous in preventing the pre-judgement of what is important to the interviewee and to understanding the functioning of ASM production. This is of particular importance when interviewing small-scale miners at various mine sites and locations given the dynamic and context-specific nature of operations and the exploratory nature of the research aimed at understanding the complex socio-economic processes in greater detail. Furthermore, any complex questions or issues that arise during the interview can be discussed and clarified, eliciting more in-depth responses and building trust between the researcher and participant (Marshall and Rossman, 2006). Allowing the interviewee to talk in detail and in a conversational manner also increases the internal validity of the results, as the answers are not predetermined and there is no judgement on what is right or wrong and to ensure that the participants feel their answers are valuable and insightful (after Marshall and Rossman, 2006). Thus, the style and delivery of the questions, and the ensuing discussion, was integral to building rapport and a professional, business-like relationship, the latter in reference to the institutions, NGOs, and policymakers to be interviewed, so that the responses are valid and perceptive. Building and maintaining relationships during, and after interviews also helped ensure that the research has greater potential to be used in informing future interventions, and have a positive impact on mineral certification schemes – fitting with the transformational and pragmatic worldview of the thesis.

With each stakeholder or small group (two to six persons e.g. mining gangs or gold refining shops), in-depth semi-structured interviews, defined as ‘a conversation with purpose’ (Kahn and Cannell, 1957, p. 149), were conducted. Often, interviews at mine sites and in some local communities evolved into group discussions, adding depth to the conversation and avoiding the need for formal focus groups; where this

occurred, it was encouraged to allow a more natural, comfortable, and informal style of interviewing improving the quality (depth and breadth) of the information gathered. The research assistants were also crucial in facilitating a natural and comfortable interviewing style, helping to facilitate access and make the necessary introductions, navigate the socio-cultural customs of Ghana, and ensuring that trust and rapport were built between the researcher and participants (Desai and Potter, 2006). For example, there are clear social etiquettes and customs when greeting people in Ghana and especially when speaking with traditional authorities (members of the chieftaincy).

The interviews lasted between 20 to 100 minutes and explored the pre-determined themes of embeddedness, power and value, as prescribed by the adapted GPN framework (Chapter 2) as well as allowing for new themes, ideas and perspectives of the interviewee to arise (e.g. trust). Each interview began with an explanation of the research and free prior and informed consent was obtained before beginning, either through the participant information sheet (Appendix 5) and/or verbally. Interviews were conducted in English or *Twi* (a dialect of the Akan language in Ghana that is spoken widely) depending on the preference of the participant. Where permission was granted, interviews were recorded using the 'voice memo' function on the iPhone, transcribed and supplemented with notetaking. For interviews in *Twi* the research assistant simultaneously translated between the researcher and participant, these interviews were later transcribed by a paid academic working at Central University College, Ghana to ensure an accurate and *verbatim* translation, as opposed to paraphrased responses. This approach also ensured any complex concepts or phrases that did not directly translate during the interview could be understood, and any inaccuracies or misunderstandings highlighted, thus further increasing the validity of the data (Berman and Tyyskä, 2011). In instances where permission was not granted to record the interview, it was too noisy on mine sites to do so, or where it was perceived by the researcher that recording the interview using a voice recorder may inhibit the participant from providing fully free and honest answers or may make them feel uncomfortable, interviews were recorded through more thorough note taking (with full consent of the participant) which were then typed up and reflected upon the same evening to ensure accurate transcripts. Semi-structured interviews continued to the point where data saturation was reached – the point at which no additional data collection provided new or unexplored themes (Saunders, et al., 2012) – and until all the main functions and labour processes involved in ASM production network had been captured.

The breakdown of interviews is shown in Table 3.5. In total, 89 individual semi-structured interviews were conducted with stakeholders, representing all key functions of the ASM production network at both the national and local levels. The numbers in the table refer to individual interview events as opposed to the number of people engaged in each interview and only account for those who were formally recorded and not spontaneous discussions that were captured in field notes. As such, the number of individuals interviewed as part of the overall study, particularly those engaged in small-scale mining, is at least twice the amount reported in the table. Furthermore, many participants interviewed can be considered to fall into two or more groupings but have been recorded only in one, and, as the following chapters

demonstrate, there are many more sub-groupings of stakeholders that represent the full array of roles and overlaps undertaken in ASM production.

Table 3.5 Summary of semi-structured interviews undertaken

Stakeholder Group	Accra (national level)	Akwatia	Tarkwa	Total
People directly engaged in small-scale mining	-	21	20	41
Buyers / dealers	1	4	13	18
Government agencies / institutions	2	1	4	7
Large-scale mining company	-	4	2	6
Non-governmental organisations	7	-	-	7
Traditional Authorities	-	4	6	10
Total	10	34	45	89

As outlined, while the research did not employ an ethnographic methodology in the strictest sense, a supplementary source of primary data was the field notes taken during the interviews and more generally, over the eight-month period of fieldwork. These included observations at mine sites regarding the roles and functions being undertaken; the structure of labour organisation at mine sites and preliminary sketches of the GPN network which were also shown to some participants to ensure accuracy; general observations and notes on interactions which occurred outside of interviews; and reflections on the researcher positionality, place and influence in the research setting (Bourke, 2014). While this data were not analysed systematically as per the semi-structured interview transcripts, they served to contextualise and triangulate the research and assist with the analysis of the primary and secondary data sources.

3.4.1.2 Secondary data

There are numerous possible sources of evidence for use in case studies and combining a number of complementary data sources is advantageous to support or invalidate data and findings. Yin (2003) identifies six major sources of evidence (documentation, archival records, interviews, direct observations, participant-observations, and physical artefacts) and considers the relative strengths and weaknesses of each. Though in agreement with Yin that ‘no single source has a complete advantage over all others’ (p. 85), there may be some that, standalone or in combination, are more pertinent to addressing the research question and objectives. Given the already-established research strategy of conducting semi-structured interviews and aside from the review of the relevant literature presented in Chapter 2, the research also drew on a number of other data sources, where available and relevant, for the overarching holistic case study as well as the embedded case studies of Tarkwa and Akwatia. These sources included policy documents, legislation and regulations, online profiles of the relevant government and non-government organisations and mining companies, data regarding the numbers of registered artisanal and small-scale miners in each location, mineral production data obtained from local level government officials and mining companies, as well as reported export data found online in annual government reports and the wider academic literature. This secondary data were used to contextualise the production network and, where applicable, in order to triangulate and test the factual accuracies of statements made by participants (internal validity) – for example, the length of time taken to purchase an ASM licence ‘on

paper' versus applying for and obtaining a licence in reality which can often be a burdensome, bureaucratic and time-consuming process (McQuilken and Hilson, 2016).

3.4.2 Data analysis: semi-structured interviews

The interviews were analysed through the process of codifying by applying and reapplying codes: 'a word or short phrase that symbolically assigns a summative ... attribute for a portion of language-based data' (Saldaña, 2009, p. 3) to qualitative data and then arranging the data in a systematic way in order to segregate, group, re-group search for patterns, and link data to consolidate meaning, explanation and understanding (Saldaña, 2009). The analysis of the semi-structured interviews combined an *a priori* and open coding approach to draw out pre-determined themes in accordance with the analytical categories of the adapted GPN framework (embeddedness, empowerment, and value) as well as to allow for emerging themes to arise from the data in an inductive approach known as grounded theory – also fitting with worldview of this thesis outlined above (Glaser and Strauss, 1967; Kvale, 2007; Saldaña, 2009). Trust, for example, was an emerging theme that became apparent as the fieldwork progressed and was later incorporated into the literature review to enable a fuller examination of the theoretical construct in the analysis.

Following the grounded theory approach, the process of codifying and data analysis was undertaken in four stages. First, each transcript was read through to enable the researcher to get 'close' with the data and provide an initial digestion and reflection (Clarke, 2005). Next, Initial Coding – breaking down the data into discrete parts, closely examining them and comparing for similarities and differences (Strauss and Corbin, 1998) – was undertaken and involved reading through the transcripts and applying codes to the pieces of data in the margin of each page. In addition to the *a priori* codes, an open coding approach was taken to enable all possible theoretical directions to be followed. Third, the coded data was then re-grouped through Axial Coding, a Second Cycle coding process that involves reassembling the data that were initially split into categories and subcategories to distil commonly occurring and important ideas and attach properties and dimensions to the data that let the researcher know 'if, when, how, and why' something happens (Saldaña, 2009, p. 159). Finally, Selective Coding (also referred to as Theoretical Coding) was undertaken in order to develop a smaller number of broader theoretical insights from the data that summarise and systematically link key findings of the research and have explanatory relevance to the phenomena under investigation (Saldaña, 2009). With the specific research methods outlined and justified, the final section of this chapter turns to examine the key ethical considerations, limitations and risks associated with this study and how they were accounted for and mitigated where possible.

3.5 Ethics, limitations and risks

This final section focuses on the ethical considerations that were incorporated into the research design from the outset and during data collection and analysis. It also provides an examination of the key limitations of the research methodology and possible risks, and how these were accounted for and mitigated where possible.

3.5.2 Ethics and limitations

Aside from the overarching methodological debates concerning ontological and epistemological perspectives pertaining to different disciplinary traditions, the key limitations of this study relate to the purposeful selection of case study sites in terms of the analytical generalisability of findings and where the boundary of the GPN cases were delineated, as well as the internal validity and reliability (replication) of the data. As outlined and justified in this chapter a number of measures were taken to ensure these limitations were accounted for and mitigated against throughout the research process. These included: the extended length of time spent in Ghana to become accustomed to the sociocultural context and customs; clear explanation of, and justification for, the research strategy and methods used; use of local field assistants to gain access, help with introductions and for translation; triangulation of multiple data sources and to add context and detail; recordings in *Twi* transcribed by an independent (to the study) academic; and 'member checking' whereby the researcher repeated back key parts of the discussion to the research participant in order to check for accuracy of understanding as well as discussions and reflections with the field assistants after the interviews (Lincoln and Guba, 1985).

Ethics are an integral part of research design and implementation and also overlap with the potential limitations of the study. Bell and Bryman (2007) advocate Wenger's (2000) approach to ethics as a 'community of practice'. Members of a particular discipline shape a set of socially acceptable ways of 'doing', fostering a sense of common enterprise and the production of a shared repertoire. In this respect, ethics becomes integral to, and embedded within, every aspect of the research process as opposed to an afterthought (Bell and Bryman, 2007), as is the case in this thesis. Incorporating ethics into the design is even more pertinent for this particular research given the context and potential sensitivity of the research undertaken – informal miners and employees of government and policy related institutions operating in a developing country and regarding high-value commodities that have in varying contexts been linked to violence and conflict.

A key ethical concern, therefore, related to ensuring informed consent and anonymity of participants. As outlined, informed consent was obtained prior to beginning interviews, and, all recordings, verbatim notes and transcripts were anonymised and assigned an identification code. Data were protected and stored electronically in accordance with the UK Data Protection Act (DPA, 1998) and the researcher acted deontologically (Saunders et al., 2012). When interviewing participants, particularly miners and labourers at the lower levels of the production network, care was taken to interview them outside of

working hours or during natural breaks in work so as not interrupt their ability to make a daily wage. Fitting with general advice in Desai and Potter (2006) for conducting research in developing countries, these participants were compensated for their time away from work either in kind (through food and/or soft drinks), a small cash payment in line with local wages, or a larger in kind donation to the mine sites visited regularly such as bags of pure water in sachets, or soap which both men and women labourers are keen to have due to the nature of their work. During the introductions with all participants it was made clear that participation in the research was very unlikely to directly benefit them so as not to mislead them into participating, and compensation was made after the interview. Participants in public office, positions of power and/or wealth were not given any compensation for their time, as their role is to speak on behalf of their organisation. However as with all participants it was agreed that the research would be freely available following completion of the PhD.

Power is also an important ethical consideration given the potentially sensitive nature of the research topic and due to the positionality of the researcher as a white male from the UK – the former colonial power of Ghana (Sultana, 2007; Bourke, 2014). Power is embedded at all levels of the study and within the sociocultural context – between the researcher and researched, the inter- and intra-relationships between the various stakeholders as well as factors such as gender, class, age, ethnicity and education particularly within the sociocultural and political context of rural West African communities (Rowlands, 1995; Desai and Potter, 2006). For example, a common comment upon introduction led to participants referring to the researcher as being from ‘our colonial masters’ and in certain areas community members assumed the researcher was Chinese. This was assumed to be due to the presence and heightened media attention around illegal Chinese small-scale miners operating in the country and the ongoing government Task Force to arrest and deport them (Crawford and Botchwey, 2016). These power dynamics therefore influenced initial access to gaining interviews with stakeholders at all levels (both positively and negatively), participant responses during interviews as well as the analysis and interpretation of the data (‘the researcher effect’).

Participant responses were further influenced through the use of local field assistants and intermediaries especially where simultaneous translation was required as field assistants have their own status within the research context and the communities being researched (Myers, 1991). Furthermore, complex concepts and phrases may not directly translate for either the researcher or researched. In order to mitigate any potential limitations and account for the influence of these power dynamics on the research, a good working relationship was built with field assistants to enable clear communication, reflexivity of the researcher and their influence was captured in field notes and considered during the analysis, and as well as ensuring anonymity, the interviews conducted in *Twi* were later transcribed and cross-checked by an independent academic (Berman and Tyyskä, 2011). Furthermore, the importance of spending an extended length of time in country was demonstrated as the researcher built their knowledge of and sensitivity to the local sociocultural dynamics, and basic language skills in *Twi* which helped with introductions, mitigate the *noise* in respondent answers, and understand how power relations will have informed respondents’ contributions (Brydon, 2006).

3.5.3 Risk

A risk matrix provides a qualitative way of defining the risk of an event based on the probability of the event occurring and the impact the event would have to the research project if it did occur (Maylor, 2010). Events established as medium or high risk (risk rating greater than 4) were subsequently addressed in the risk register (Appendix 6). In addition to the risk register, which captured risks specific to conducting research in sub-Saharan Africa and West Africa (for example, the outbreak of Ebola in the region in 2014) and regarding potential sensitive challenges around ASM and high-value minerals, the University of Surrey (2014) *Safety When Travelling Abroad & in the UK guidance for staff* document which contains a risk assessment was also completed prior to travel as it identifies more general risks associated with travel and work abroad. A further useful source of information concerning conducting research in developing countries that was referred to, was Desai and Potter (2006) which contains practical, ethical and risk related advice for researchers to consider when designing and implementing research.

3.6 Conclusion

This chapter has outlined and justified the worldview of this thesis. It has also shown how this combined ontological and epistemological framework has driven the research design, strategy and justification of the methods used to meet the research objectives. These are summarised in Table 3.6. By adopting a plurality of ontological and epistemological perspectives, as is increasingly common in the social sciences, the research holds a social constructionist, pragmatic, and transformative worldview. Thus, it is the position of the researcher in this thesis that there is a need to first and foremost understand the subjective, social context of small-scale miners and the ways in which they are embedded in socially constructed socio-political structures. Through the capture of detailed qualitative data that focuses on empowerment (both agency and opportunity structure) and the interrelationships between social actors in local communities of ASM production that ASM certification schemes have so far been unable to fully capture and understand. While, at the same time, drawing on and, where possible, bringing together diverse academic disciplines to find pragmatic solutions that have the potential to offer genuine transformational change and generate recommendations for the development of more effective and pro-poor certification schemes and formalisation strategies to the benefit of often marginalised small-scale miners.

The research strategy purposely selected Ghana as a holistic case study, with the production nodes of Tarkwa and Akwatia forming two embedded case studies in order to ensure all portions of the GPN could be mapped, enable a comparison between gold and diamond mining, and the ability to develop rich, insightful and analytically generalisable findings. Through eight months of in-depth fieldwork a range of ethnographic type research methods were employed. In total, 89 in-depth, semi-structured interviews with key stakeholders in the production network were undertaken in order to capture rich and detailed qualitative data regarding the personalised experiences of communities and miners and functioning of

the network. This data was triangulated and further contextualised by field notes, analysis of policy and mineral governance frameworks, member checking, and observation. Throughout the research process ethical considerations were embedded in the research design and implementation, and a range of strategies ensured any limitations and risks of the study could be accounted for and mitigated where possible.

Table 3.6 Summary of research methods and data collection in relation to answering the research question

Research question	Research aim	Research objectives	Methods used	Data collected
How can ethical mineral certification initiatives and formalisation strategies provide genuine transformational change for artisanal and small-scale miners in sub-Saharan Africa?	To broaden understanding of the demographics of ASM groups operating in rural sub-Saharan Africa, the dynamics of their operations and the intricacies of the local production networks they are a part of in order to provide perspective and policy recommendations to improve the design and implementation of for ethical mineral certification initiatives and formalisation strategies that are more in-tune with the realities of ASM on the ground.	To critically reflect on why formalisation has proved to be so elusive by mapping and examining the overarching international and national mineral governance frameworks operating in sub-Saharan Africa, and specifically Ghana, as well as the activities of ethical mineral certification initiatives in the country.	Literature review Analytical review of key policy documents, governance frameworks etc. Semi-structured interviews	Wide range of academic and grey literature, policy documents etc.
		To improve understanding of the dynamics of local ASM production networks, operators, and their experiences within the poverty trap by applying the adapted GPN framework to map and analyse the social networks of artisanal and small-scale gold and diamond production in Ghana.	Semi-structured interviews Two in-depth detailed case studies of ASM gold and diamond production Analytical review of key policy documents, governance frameworks etc. Mapping of production networks through GPN framework	Over 89 individual semi-structured interviews with key stakeholders at all levels in the production network. Field notes Personal experience of time spent living and researching amongst ASM communities
		To explore the potential and critically reflect on the utility of the GPN framework for generating new insights and knowledge by applying it to map local ASM production networks.	Literature review Application of adapted GPN through framework	Wide range of academic and grey literature, policy documents etc. Over 89 individual semi-structured interviews with key stakeholders at all levels in the production network
		To provide specific and generalisable policy recommendations for improving formalisation strategies and ethical mineral certification initiatives in Ghana, as well as the wider sub-Saharan Africa region, that are more in tune with the realities of ASM on the ground.	Analysis of semi-structured interview Grounded Theory Analytical generalisations of findings	Combination of all of the above

Chapter 4 – ‘Informalising’ Artisanal and Small-Scale Mining

4.1 Introduction

There are now in place a growing number of international and regional programmes, policy interventions, and ‘development’ initiatives which seek to facilitate the formalisation and tackle the negative impacts of ASM. As Hilson and Maconachie (2017) point out, reflecting on the current momentum accumulating in policymaking spaces in recent years, ‘the push to formalise ASM has never been greater’ (p.1). Yet, and as explained in Chapter 2, despite over four decades of intensive research and support programmes for the sector (Hilson and McQuilken, 2014) as well as renewed efforts spearheaded by some of the world’s most influential and well-financed global development agencies,²⁸ the vast majority of artisanal and small-scale miners operating globally and in sub-Saharan Africa in particular remain deeply entrenched in the shadow economy. It has become clear that only holistic and sustained policy interventions can break the vicious cycle of poverty in which most of these operators now find themselves trapped.

This chapter builds on some of the key concerns raised in Chapter 2 regarding wider mineral governance frameworks and the policy environment more generally in sub-Saharan Africa. It accomplishes this through a focus on the political economy of the region and by mapping the regulatory structures, institutions, and key stakeholders governing ASM, with special emphasis on Ghana, the case study examined here. Drawing on analysis of key policy documents and feedback from in-depth interviews conducted with officials from a range of organisations and regulatory authorities as well as selected small-scale miners, it reflects on why formalisation (of ASM) has proved to be so elusive in Ghana and sub-Saharan Africa more generally, and investigates how the policy environment continues to ‘create’ conditions which fuel the sector’s informality. In doing so, the analysis provides perspective on the challenge that champions of ethical mineral certification schemes must embrace if genuinely committed to effecting the transformational change they claim to be making to the lives of ASM operators. The analysis that follows in part addresses Objective 1 (‘to critically reflect on why formalisation has proved to be so elusive by mapping and examining the overarching international and national mineral governance frameworks operating in sub-Saharan Africa, and specifically Ghana, as well as the activities of ethical mineral certification initiatives in the country’) of the thesis.

The proceeding analysis forms the three upper quadrants of the adapted GPN framework presented in Figure 2.3. It maps the international and national mineral governance frameworks, political economy, institutions, and stakeholders through the three interrelated analytical categories of *embeddedness*, *empowerment (power and agency)*, and *value* (Chapter 2, Section 2.3) at play at the macro-level in Ghana and within which ASM activities are embedded. This is what is conceptualised in the theoretical

²⁸ Examples include: the 2013 Minamata Convention on Mercury (UNEP, 2013); the UK Department for International Development’s (DFID) GBP 5 million *Supporting Sustainable Development of Mining in Rwanda* development programme (DFID, 2018); the International Institute for Environment and Development’s (IIED) ASM Dialogue Programme 2014–2019 (McQuilken and Hilson, 2016; IIED, 2017).

framework built in Chapter 2 (Section 2.3.4), as the *opportunity structure* (the formal and informal regulations, actors, institutions etc.) which acts to inhibit or enable the *agency* of artisanal and small-scale miners, and subsequently the extent to which operators are *empowered* to pursue purposeful choices and move into the formal economy. With this high-level perspective, the final part of the chapter provides a critical overview and reflects on the partnerships Solidaridad, an NGO whose activities include supporting ASM operators to meet eligibility criteria for ethical mineral certification, has formed with small-scale miners in the country.

4.2 Mineral governance framework: ‘Creating’ informality

A logical start point for this discussion on the broader mineral governance policy environment is the 2009 African Mining Vision (AU, 2009). This is because of its importance as *the* blueprint for mineral-led development in sub-Saharan Africa over the next 50 years.²⁹ Informed by a range of multi-lateral policy initiatives, dialogues, and reports stretching back to the turn of the century, the AMV was developed by the African Union (AU) in partnership with a formidable international taskforce comprising the United Nations Economic Commission for Africa (UNECA) and representatives from the African Mining Partnership (AMP), International African Development Bank (AfDB), United Nations Conference on Trade and Development (UNCTAD) and United Nations Industrial Development Organization (UNIDO). At its heart, the AMV outlines a future comprising the: ‘Transparent, equitable and optimal exploitation of mineral resources to underpin broad-based sustainable growth and socio-economic development’ (AU, 2009, p. V). Significantly, it also recognises, up front, that ‘Artisanal and small-scale mining represents a special challenge, which require a separate discussion and different and tailor-made approaches to address the challenges’ (AU, 2009, p. 15). It then calls upon signatories to commit to ‘foster[ing] the establishment of resilient artisanal and small-scale mining (ASM) communities’ through formalisation (AU, 2009, p. 32), and, underscores the need to ‘improve the understanding of ASM issues on the policy, regulatory, environmental, health, cultural, society, and economics domain’ (AU, 2009, p. 27). Table 4.1 summarises the AMV’s framework for action on ASM.

²⁹ The African Mining Vision includes the ‘V-tentative framework for action’ which details three stages of implementation: short-term (up to five years); medium-term (five to twenty years); and long-term (twenty to fifty years) (AU, 2009, p. 30).

Table 4.1 Africa Mining Vision Tentative Framework for Action on ASM

Objective	Related Actions		
	Country-Level	Regional Economic Communities (RECs) Level	Continent-Wide
Foster the establishment of resilient artisanal and small-scale mining (ASM) communities	Formalise ASM and upscale programmes to upgrade knowledge, skills and technology in the ASM sector; mainstream ASM into poverty reduction strategies; ensure gender equality; eliminate child labour; stimulate partnership with government and large-scale mining to facilitate access to technology, skills, knowledge and markets; and strengthen ASM associations.	RECs to harmonize ASM policies, laws, regulations, standards and codes.	AUC/AMP in collaboration with Communities and Small-Scale Mining (CASM)-Africa to foster the implementation of the Yaoundé Vision on ASM and to spearhead initiatives to formalize and upgrade skills, knowledge and practices in the artisanal and small-scale mining sector. The AUC to anchor efforts to develop continental policies, laws, regulations, standards and codes to promote sustainable ASM.

Source: AU (2009, p. 32)

Yet despite highlighting the importance of ASM, a significant departure from the earlier rhetoric emanating from global institutions such as the World Bank (1992) which suggested small-scale miners and large-scale operations should receive the same policy treatment (see Section 2.2.1), only three pages of the 47-page AMV is dedicated to the sector. This reinforces concerns raised by Hilson and McQuilken (2014) that ‘despite its growing economic importance, ASM occupies ... a peripheral position on the economic development agenda of sub-Saharan Africa’ (p. 104). The authors go on to ascribe this oversight, in large part, to a poor understanding of the sector’s role in the ‘region’s liberalised economies’, a point which, interestingly, the architects of the AMV (AU, 2009, p. 29) also appear to recognise:

To improve the impact of ASM programmes there is need to improve typification of the sub-sector, and government, donors and CSOs’ [civil society organisations] knowledge on ASM, in particular local socio-economic and cultural peculiarities and context; differentiation among small-scale miners; the human, social, financial, natural and physical capital assets of ASM “miners”; and other dynamics in ASM communities.

In sum, on the one hand, while policymakers are certainly starting to recognise that ASM is populated by an array of individuals, and that its activities are highly context-specific and dynamic, on the other hand, the text outlined in Table 4.1 and complementary rhetoric has not yet facilitated an effective formalisation agenda for ASM worldwide. This is especially the case in sub-Saharan Africa, and Ghana more specifically. Here, mineral governance and policy frameworks have remained relatively unchanged since their inception, and have consequently fuelled the growth of informal ASM activities in a number of ways that will now be explored in greater detail.

4.2.1 Empowering large-scale mining through regulation and policy

Why has formalisation of ASM proved to be so elusive in sub-Saharan Africa? One significant reason is the impact of the wider regulatory apparatuses, mineral governance, and policy frameworks that have shaped the region's mining sector over the past four decades. Specifically, the mining sector reforms implemented in the 1980s and 1990s (see Chapter 2, Section 2.2.1) which further 'informalised' the ASM economy in the region by empowering large-scale mining (Hilson and Okoh, 2013; Hilson, 2017a). The reforms succeeded in opening up sub-Saharan Africa's economies to foreign direct investment and in the process injected much-needed capital into its previously nationalised and faltering large-scale mining sectors. However, in doing so, they heavily prioritised the growth of foreign-financed large-scale mineral exploration and mining activity and little else. As a result, at the same time they created an opportunity structure within which the region's ASM sector and impoverished operators have, and continue, to struggle to find space.

While this experience is by no means unique to Ghana, it was the region's inaugural reformer, following a blueprint outlined in the World Bank's seminal document *A Strategy for African Mining* (World Bank, 1992). Here, the impact of the reforms on ASM, specifically the way in which they have fuelled the growth of the informal segment of the sector, have been significant. Aimed at deregulating and liberalising the large-scale mining sector, the mining sector reforms were implemented in Ghana in the 1980s, 1990s and again in the 2000s,³⁰ were pursued, in the spirit of the strategy, in a bid to attract foreign direct investment, often alongside Structural Adjustment Programmes.³¹ In the 1990s, Ghana was earmarked by the World Bank and IMF as one of 16 countries to receive 'immediate priority for exploration and investment by private investors' to the tune of 'USD 5 to 10 million per year' (World Bank, 1992, p. xii):

The recovery of the mining sector in Africa will require a shift in government objectives towards a primary objective of maximizing tax revenues from mining over the long term, rather than pursuing other economic or political objectives such as control of resources or enhancement of employment. This objective will be best achieved by a new policy emphasis whereby governments focus on industry regulation and promotion and private companies take the lead in operating, managing and owning mineral enterprises. [World Bank, 1992, p. x]

It is instructive, therefore, to examine how the prioritisation of large-scale mining development and a move away from the state's involvement in the management of its mineral endowments, has fuelled the growth of informal ASM in Ghana. Implementing what were considered at the time to be some of the most liberal mining sector reforms in the world (Campbell, 2004; Jacobs, 2013), in the early 1980s the country instituted a series of measures deemed necessary to resuscitate its deteriorating large-scale mining

³⁰ Still considered uncompetitive compared to other African fiscal regimes, in the late 1990s Ghana's mineral tax regime was further reformed to encourage investment, and later the *Minerals and Mining Act, 2006* introduced lower income tax and royalty rates (Akabzaa, 2009; Jacobs, 2013).

³¹ See Chapter 2 (Section 2.2.1) for an overview of SAPs.

sector amid wider socio-political and economic crisis.³² These changes were made under the auspices of the *Economic Recovery Programme* (1983), Stage 2 of which became the country's Structural Adjustment Programme; the *Minerals and Mining Law* (1986), which contained the foundational legislative measures and revised fiscal regime to encourage investment; and the World Bank USD 40 million *Mining Sector Rehabilitation Project*, 1988 (McMahon, 2010). Sweeping changes were made between 1975 and 1994, including a reduction in corporate income tax from 50–55 per cent to 35 per cent; initial capital allowance, whereby mining companies can offset the cost of investments, was increased from 20 per cent in 1975 for the first year of production, and 15 per cent in subsequent years, to 50 per cent and 75 per cent, respectively, in 1986; and royalties on the total value of minerals extracted were reduced from 6 per cent in 1975 to 3 per cent in 1987. The mineral duty (5 per cent), import duty (5–35 per cent), and foreign exchange tax (33–75 per cent), all of which contributed significantly to government revenues prior to the reforms, were simultaneously abolished (Addy, 1998; Akabzaa, 2004; Campbell, 2004; Jacobs, 2013). These changes are credited with saving Ghana's mining industry from collapse. They attracted some USD 11.5 billion of investment in the sector between 1983 and 2011 (Aryee, 2012) and in the process transformed Ghana into the world class gold producer that it is today.³³ But at the same time, and a significant impact of this large-scale mining 'prioritisation' that has been overlooked, is that the reforms also pushed hundreds of thousands of the country's citizens into the informal ASM economy in the ways described in Chapter 2 (e.g. Banchirigah, 2006; Hilson, 2010a; Spiegel, 2009; Banchirigah and Hilson, 2010). But how, exactly, has the prioritisation, promotion, and empowerment of large-scale mining through these reforms fuelled the 'informalisation' of ASM in Ghana? Several key interlinked developments stand out in particular. These centre around the issue of access to and availability of land as well as power imbalances between large-scale mining companies, the state, and impoverished artisanal and small-scale operators. They are examined here through the conceptual lens of *empowerment* which was built in Chapter 2 as part of the adapted GPN framework and which goes a long way to articulating and understanding these dynamics.

First, the mining sector reforms which were designed to incentivise foreign large-scale mining and mineral exploration companies have also acted to greatly empower them by leasing vast quantities of land to these multinationals for several decades or more.³⁴ Under the *Minerals and Mining Law 1986*, there was no legal requirement for mining companies to transfer or shed portions of concessions deemed uneconomical to mine by management but which may have been suitable for ASM and/or other

³² The global economic and oil crises of the 1980s spurred a series of interlinked socio-economic crises in Ghana through a decline in the country's major exports of cocoa, mineral resources and timber resulting in a USD 127 million trade deficit, rising costs of living and raw materials, as well as a fall in the production of key agricultural commodities bringing large parts of the population close to famine. These issues were exacerbated by the impacts of severe drought and bush fires, as well as the return of hundreds of thousands of Ghanaians expelled from Nigeria in 1983 under the slogan of 'Ghana must Go' to return undocumented immigrants home (Spooner and Smith, 1991; Adjei et al., 2014).

³³ In 2016 Ghana ranked 11th in the world for gold production producing 95.6 tonnes and is Africa's second largest gold producer after South Africa. Gold contributes more than 95 per cent of the country's total mineral revenues, with total mining exports valued at just over USD 5 billion in 2013 (ICMM, 2015; World Gold Council, 2018).

³⁴ Section 46 (p. 16) of the 1986 *Minerals and Mining Law* provides for the granting of mining leases 'for a period not exceeding thirty years' and in an area not exceeding 50 km² (or 150 km² if concessions are together) unless it be considered in the 'national interest to exceed the limits provided'.

subsistence economic activities such as farming. This concentrated significant power in the hands of large-scale mining companies and has, in effect, informalised ASM in Ghana. The reforms essentially disempowered the state from being able to negotiate effectively with foreign mining companies, as it found itself in a 'race to the bottom' with other countries in the region to attract much-needed investment at a time of pronounced economic crisis (Otto, 1998; Campbell, 2001; 2003). Although Ghana gained independence from Great Britain in 1957, reforms (and the consequent awarding of vast areas of land as concessions to foreign companies) essentially returned overseas control of the large-scale mining sector. This shift in power has put 'private companies [in a position to] take the lead in operating, managing and owning mineral enterprises' (World Bank, 1992, p. x). Jacobs (2013, p. 22) reflects on what has been a common theme across sub-Saharan Africa:

The new regulatory frameworks therefore led to a shift of authority from governments to industry actors, which impacted negatively on the capacity of governments to plan, to monitor, to negotiate and at times to ensure that implementation of the new regulations themselves. Consequently, although revenue flows continue to be crucial to the strategies being developed by African governments, it is now generally recognized that relying on mining revenue on its own is by no means sufficient to stimulate economic transformation in Africa.

The second effect, is the way in which the reforms have simultaneously disempowered entire communities. Referring back to the theoretical framework presented in Chapter 2 (Section 2.3.4). This fits with Oakley's (2001) conceptualisation of power that explains how in a 'zero-sum' scenario power can only be gained as a result of a reduction of power held by others. In many parts of Ghana, the livelihoods of many rural populations have been disrupted by the mining sector reforms as residents find themselves unable to use lands now under mining concessions. The minimal attention paid to formalising the ASM sector and *empowering* communities in reforms and policy, versus large-scale mining, has exacerbated the situation further. Described as a significant policy 'afterthought' in the mining sector reform process (Hilson, 2007; Hilson and Okoh, 2013), the government did not turn its attention to legalising the ASM sector until a full three years *after* the passing of the 1986 *Minerals and Mining Law*. By which time, the country's lands were already in the hands of foreign multinationals and tied up with overseas capital (Table 4.2). When the 1989 *Small-Scale Gold Mining Law* was finally implemented, a move which officially legalised ASM in Ghana, prospective small-scale licensees were forced to compete even-handedly with large scale mines for the few remaining areas of land that had not already been demarcated.

This approach was driven by the misguided belief of officials at the World Bank that the majority of small-scale miners are entrepreneurs and should therefore be allowed to compete fairly on the same terms as multinational 'privately-owned companies'. Encapsulated in *A Strategy for African Mining* (World Bank, 1992), the documents states that '[t]here should be simple procedures for artisanal miners to obtain a mining concession or concessions in return for a nominal annual surface rental in the same way as any other mining entrepreneur' (p. 44). Significantly, however, this even-handed approach does not account for the considerable differences in agency and power (empowerment) between large-scale mining

companies and small-scale miners. Unlike the impoverished ASM operators scattered across rural sub-Saharan Africa who are disempowered, lack the *assets* and *capabilities* to manoeuvre effectively within the constraining opportunity structure, and are largely confined to the informal economy (Sen, 1999 – Chapter 2, Section 2.3.4), large-scale mining companies have vast resources, agency, and power at their disposal and operate within an opportunity structure that empowers them and promotes their interests (McQuilken, 2016). Not surprisingly, mining sector reforms, which have a clear large-scale mining bias, have further ‘informalised’ ASM in countries such as Ghana.

Table 4.2 Mineral governance framework for small-scale mining in Ghana

Year	Legislation covering ASM	Description in relation to ASM
Mining laws and regulations		
1986	Minerals and Mining Law, 1986 (PNDCL 153)	Introduced sweeping mining sector reforms to encourage foreign direct investment through preferential tax rates, incentives and benefits such as exemption of custom duties on equipment, various employee income tax relief, and capital expenditure allowances.
		Required the purchase of a restricted reconnaissance/prospecting/mining licence to mine building and industrial minerals on a small-scale. In respect to other minerals (e.g. gold and diamonds) was not permissible unless in an area designated for small-scale mineral operations at the discretion of the Secretary and Minerals Commission, also able to prescribe the minerals to be mined.
1989	The Small-Scale Gold Mining Law, 1989 (PNDCL 218)	Legalised artisanal and small-scale gold mining for the first time. Regulated registration activity, granting of gold-mining licences to individuals, groups and registered cooperatives, licensing of buyers, and the establishment of Minerals Commission district mining centres to monitor activities and support small-scale mining applicants.
1989	Precious Minerals Marketing Corporation Law, 1989 (PNDCL 219)	Changed the Diamond Marketing Corporation into the Precious Minerals Marketing Corporation (PMMC) and authorised it to buy and sell gold from small-scale miners.
1993	Minerals Commission Act, 1993 (Act 450)	Established the Minerals Commission as a corporate body and defined its functions and powers.
2006	Minerals and Mining Act, 2006 (Act 703)	Empowered the Minister of Lands and Natural Resources, after consulting Minerals Commission, to designate areas for ASM operations. Repealed the Minerals and Mining Act, 1986 and Small-Scale Gold Mining Law, 1989 (among others) and incorporated existing laws and regulations on the sale of mercury and minerals, use of explosives, requirement for environmental permits etc. into one piece of legislation.
2015	Minerals and Mining (Amendment) Act, 2015	Makes amendments to the <i>Minerals and Mining Act, 2006</i> (Act 703) to enable the Minister of Lands and Natural Resources to prescribe a variable rate of royalty payments (formerly fixed at five per cent), and second, to enable the confiscation of equipment used in illegal artisanal and small-scale mining operations.
2016	Minerals Development Fund Act, 2016 (Act 912)	Provides legal basis for the Minerals Development Fund which was established in 1993 in order to provide funding for host communities to undertake development projects (Mining Community Development Schemes) in areas affected by mining and royalties for landowners, and traditional authorities (chiefs). The Act also prescribes the contribution to the budget of mining sector institutions and specific mining related projects including the MLNR, Minerals Commission, and Geological Survey Department. Monies from the fund are derived from: 20 per cent of mineral royalty received by Ghana Revenue Authority, as well as parliament, returns on investments from the fund board, and donations / grants.
General laws and regulations affecting ASM operations		
1994	Environmental Protection Agency Act, 1994 (Act 490)	Functions of the agency include the issuing of environmental permits for ASM, and prescribing and ensuring compliance with environmental regulations.
1994	Water Resources Commission Act, 1996 (Act 552) and Water Use Regulations, 2001	Regulation of domestic and commercial water use and where Minerals Commission, in consultation with the EPA, considers the proposed water use to require an environmental management plan.
1999	National Land Policy	Land policy plan that incorporates range of existing land laws and regulations for the first time.

Sources: *Minerals and Mining Law 1986*; *The Small-Scale Gold Mining Law, 1989*; *Precious Minerals Marketing Corporation Law, 1989*; *Minerals Commission Act, 1993*; Hilson (2001); *Minerals and Mining Act, 2006*; *Minerals and Mining (Amendment) Act, 2015*; ICMM (2015); Ghana Legal (2015); FAO (2015); McQuilken and Hilson (2016); *Minerals Development Fund Act, 2016*. Note: only the main regulations and laws governing ASM are given here, for a fuller list see: Hilson, 2001; Boas and Associates (2015); ICMM, (2015).

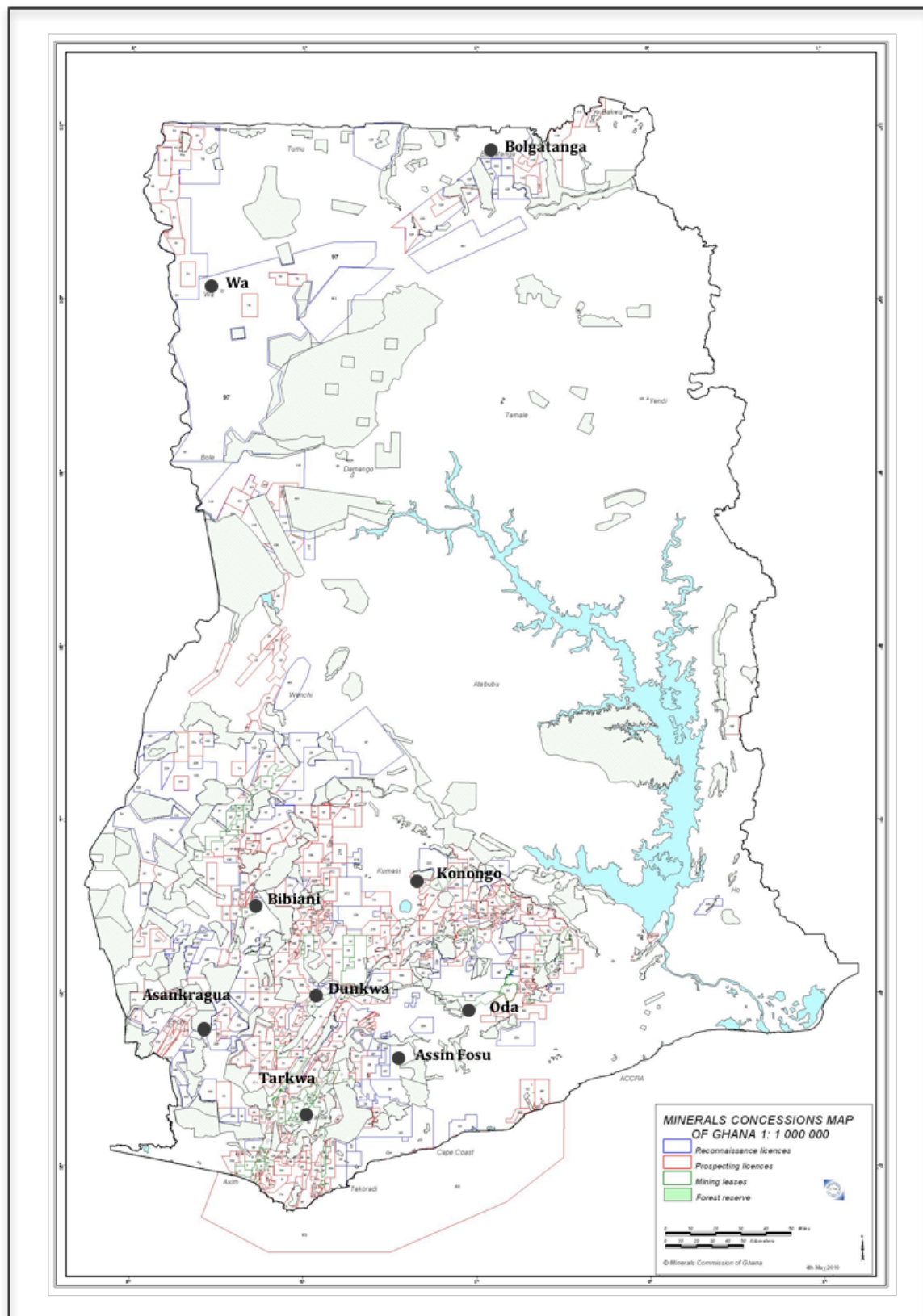
A wealth of evidence clearly demonstrates that reforms have impeded the formalisation of ASM in Ghana (Andrew, 2003; Andrew and Hilson, 2003; Banchirigah, 2006; Hilson and Yakovleva, 2007; Hilson, 2011; Hilson and Okoh, 2013; Crawford and Botchwey, 2016; McQuilken and Hilson, 2016). They have also helped to stoke social unrest in rural communities. The failure to account for differences in agency and sufficiently distinguish between large-scale and small-scale miners in legal frameworks (and the resulting disempowerment of the latter) has culminated in significant tension and even conflict between these parties over access to mineralised land. This is despite the enactment of the *Minerals and Mining Act, 2006*, which consolidated pre-existing core pieces of legislation (Table 4.2) and allowed for the transfer of mineral rights, thereby making it easier for companies to shed under-utilised parts of their concessions for potential reallocation to ASM parties (through government). Even in light of this very significant change, today, prospective licensees continue to struggle to formalise, confronted by a number of obstacles, including overlapping and competing claims. These points were highlighted in an interview with an NGO official:

I think there are a lot of barriers in our system that need to be moved, for instance companies come in, they take large tracts of land, you know, for over 20 some 30 years, and as for the Minerals Commission requirement every time you are going to renew your licence you shed off 50 per cent of the area but most, they don't do that, and I think the enforcement on the part of the regulatory bodies has not been very strong to ensure that happened. So, we are aware that all, most of these so called, sometimes I don't want to use that illegal, some of these who call them 'illegal miners' operate in these concessions. So, some of them may be waiting to regularise but they go to the [Minerals] Commission only to find that they are not in a blocked-out area for small-scale mines or they are working in other people's concession.³⁵

Based on an analysis of available mine concession maps, at present, an estimated 30–40 per cent of Ghana's territory could be under concession to foreign mining and mineral exploration companies (Figure 4.1). As of February 2018, there were a total of 296 large-scale mining licences, of which 161 were active (comprising prospective, reconnaissance, and mining leases), and an additional 361 applications were being reviewed (MinCom, 2018a). By failing to sufficiently take into account the needs of ASM, these reforms have produced a policy framework which places the sector's operators and prospective licensees in a disadvantageous position. Implemented in the spirit of *A Strategy for African Mining* (World Bank, 1992), these sweeping changes culminated in the establishment and fortification of five core mining institutions that wield varying degrees of power (Table 4.3) and which are reflected in Ghana's current institutional arrangement for the sector (Figure 4.2): 1) Ministry of Mines; 2) Department of Mines; 3) Geological Survey; 4) Mineral Promotion Agency; and 5) Environmental Office (World Bank, 1992).

³⁵ Interview, 21st August 2014, NGO official.

Figure 4.1 Large-scale mining concessions and location of Minerals Commission district centres for small-scale miners



Source: Adapted from MinCom (2010); Aryee et al, (2003).

4.2.2 Disempowering small-scale miners through licensing

A second way in which the opportunity structure for mining has acted to informalise the artisanal and small-scale segment across sub-Saharan Africa, and in Ghana specifically, has been through the design and implementation of the licensing process. Again, the lens of *empowerment* built through the conceptual framework in Chapter 2 is useful here to explain these dynamics. In a similar way to the overarching mineral governance frameworks, the specific licensing procedures installed in the region in the late-1980s are also a product of wider ‘thinking’ in policy making circles at the time. At the height of the first wave of mining sector reform, artisanal and small-scale miners were, as indicated, very much an ‘afterthought’, perceived by policymakers in an entrepreneurial light (Hilson, 2007). The World Bank report, *Small-Scale Mining: A Review of the Issues*, captures this very clearly, reporting that ‘in contrast to large-scale industry, the small enterprise segment has consistently been identified as a fertile ground for the growth of indigenous entrepreneurship’ (p. 16). As is now the case in other countries in the region, such as Liberia and the DRC (see Chapter 2, Section 2.2.1), in Ghana, the licensing processes enshrined in the 1989 *Small-Scale Gold Mining Law* were designed with the entrepreneurial businessperson in mind, as opposed to the poverty-stricken, marginalised individual. The result, as Hilson et al., (2017, p. 86) explain, drawing on elements of De Soto’s (2000; 2002) *legalist* argument, is that rather than formalising the sector ‘the burdens imposed by state regulation on the entrepreneurial activities of the poor’ have created the informal space within which ASM is found today. This is perhaps best epitomised by the cumbersome 14-step licensing process, detailed by Aryee et al. (2003) and on the Mineral Commission’s website (see MinCom, 2018b). Despite concerns raised repeatedly about its inappropriateness (e.g. Hilson 2001; 2007, Hilson and Okoh, 2013; McQuilken and Hilson, 2016; Hilson et al., 2017) the system remains virtually unchanged to this day (Figure 4.2).

To be eligible to apply for a small-scale mining licence (a plot not greater than 25 acres or 0.1 km²), prospective licensees must be a citizen of Ghana and over the age of 18. Upon identifying an area and confirming its availability, applicants must first submit 10 copies of a completed small-scale mining application (the form costs GHS 100 equivalent to USD 22);³⁶ as well as 20 copies of site plans (which can cost up to GHS 1,000 to have completed by a professional) to one of nine district offices (centres³⁷) operated by the Minerals Commission; and pay a ‘consideration fee’ (GHS 550). Located in key mining areas largely in the west of the country (Figure 4.1), the district centres are mandated to support small-scale miners with their applications as well as monitor and regulate activities within their assigned jurisdictions. But while empowered to screen and appraise initial applications, unlike some African countries, such as Tanzania, where decision-making for small-scale licences can be made at the local government level, a move made to streamline and expedite the process (Fisher, 2007), in Ghana officers based at these district centres (‘district officers’) have no real power and cannot award licences (Table 4.3). If the application meets all of the minimum requirements prescribed in law, a 21-day notice is placed

³⁶ As of February 2018, 1 USD = GHS 4.48 = GBP 0.72 (OANDA, 2018)

³⁷ The *Minerals and Mining Act* 2006 refers to the ‘District Office of the Commission’ shortened to ‘District Office’. For clarity, in this thesis the term ‘district centre’ will be used, which is also how the buildings are referred to on signage at some of the centres visited.

with the District Assembly, the administrative and decision-making authority for the area.³⁸ When the period is up and the application approved by the district officer, an environmental permit (costing GHS 750) is obtained from the Environmental Protection Agency (EPA), the nearest office of which may be located in the country capital, and sent to Minerals Commission headquarters in Accra for further processing. After Minerals Commission officers have received the requisite processing fee of GHS 250 and are satisfied that the documents meet all the requirements, they make a recommendation to the Minister of Lands and Natural Resources, who must approve and sign off on all applications, on whether to issue a licence. Upon being issued the licence, the applicant must send a copy to the High Court in order to 'swear an oath' and obtain a certificate of proof, as well as registering the official agreement with the Land Valuation Board and Title Deeds registry at the Lands Commission, before returning to the Minerals Commission to receive an operating permit from the Inspectorate Division in order to commence work. The process is then repeated several years later, as small-scale mining licence are subject to renewal every three to five years depending on the size of the concession (Aryee et al., 2003; Hilson and Okoh, 2013; McQuilken and Hilson, 2016; MinCom, 2018b).³⁹ The complicated licensing process has clearly been designed without fully understanding the lack of agency, capabilities, and needs of impoverished operators (Sen, 1999 – Chapter 2, Section 2.3.4). Instead, it has been developed with the misguided idea of the small-scale mining 'entrepreneur' in mind (Hilson et al., 2017). This is the second key reason as to why the majority of small-scale miners in Ghana, as elsewhere, have continued to struggle on in the informal economy (Objective 1).

Table 4.3 National level stakeholder mapping

Stakeholder	Role in ASM governance
Government	
Ministry of Lands and Natural Resources (MLNR)	<i>Holds the greatest degree of decision making-power with regards to developing mineral policy and management of the ASM sector, and must approve every small-scale mining licence.</i> - Role and mandate to ensure the sustainable management and utilisation of Ghana 's lands, forests, wildlife and mineral resources for socio-economic growth and development. - The Minister is empowered through the <i>Minerals and Mining Act, 2006</i> in a number of ways, and in most cases though required to consult with the Minerals Commission before exercising a power, is able to operate autonomously. Key powers include: - o Must approve and sign all small-scale mining licence applications. - o May designate areas for small-scale mining operations. - o May determine length of time of a renewed small-scale mining licence. - o Prescribe the fees payable for grant and renewal of small-scale mining licences. - o Revoke a small-scale mining licence where 'the Minister is satisfied' a contravention has taken place; the licensee is convicted of a smuggling or related offence; or where they are 'satisfied it is in the public interest to do so' (point 87). - o Appoint the members of Small Scale Mining Committees and determine the length of time and on what terms they hold office. - o Must provide written permission for the use of explosives in small-scale mining operations. - o Prescribe the rules and regulations for sale of minerals, and issue licences as the Minister sees fit for persons or bodies to deal in minerals. - o Confiscate equipment used in illegal operations under the <i>Minerals and Mining (Amendment) Act, 2015</i>.

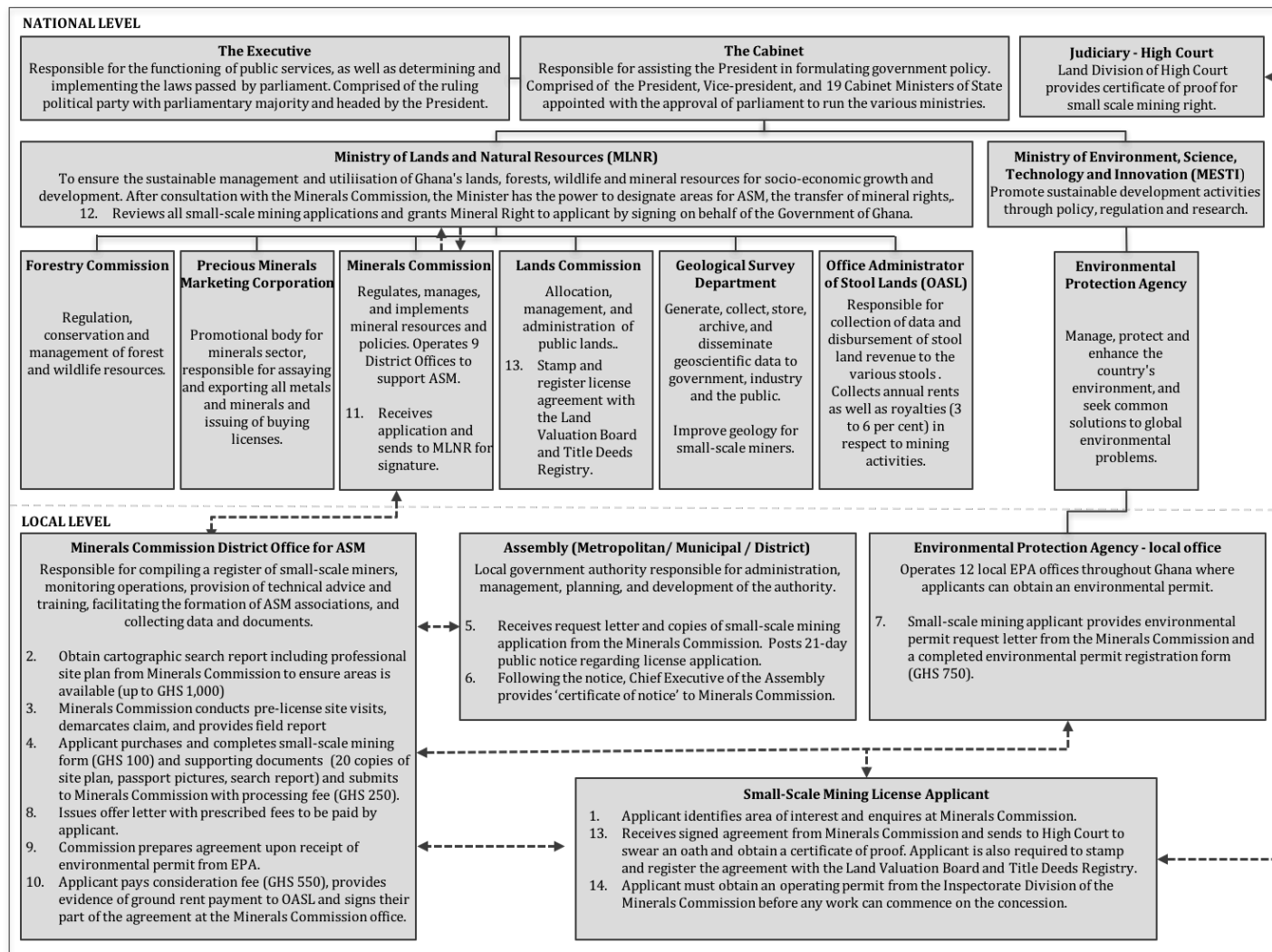
³⁸ The nomenclature of Assemblies in Ghana is made according to their population size: Metropolitan (>250,000); Municipal (>95,000); District (>75,000) (GhanaWeb, 2018).

³⁹ For concessions that are one to five acres in size the licence must be renewed every three years, and for concessions five to 25 acres it must be renewed every five years.

Minerals Commission	<i>Limited decision-making power but able to advise on policymaking, monitor and enforce ASM operations, process licences locally, and award gold buying licences.</i> - Performs a technical and regulatory function. Main regulatory body for the minerals sector, responsible for regulating and managing mineral resources, and formulating, coordinating and implementing mining-related policies. - Operates national office in Accra as well as nine small-scale district offices the function of which is to support current and prospective small-scale miners with their licence applications, monitor activities and enforce regulations, as well as seek training opportunities and facilitate the formation of small-scale mining associations. - The <i>Minerals and Mining Act, 2006</i> requires that the Minister must obtain the advice and recommendation of the Minerals Commission before exercising a power. However, the Minerals Commission operates under the direction of the Minister and as such has no real power in decision making, but acts in an advisory role involved in policy formation, and in a technical role through processing licence applications and monitoring activities. - Empowered to support and process small-scale mining applications at the local district offices, make a recommendation and sends them to the Accra Minerals Commission office for further processing and then to be sent to the Minister where a decision is made to grant, reject, or whether more information is needed. - The Inspectorate Division of the Minerals Commission is empowered to monitor and enforce small-scale mining regulations, and hold enquiries where there may be disputes.
Precious Minerals Marketing Corporation (PMMC)	<i>Limited decision-making power to affect changes in policy, but works with other mining related agencies, has the power to issue private companies with national and local diamond and gold buying licences, and is responsible for all mineral exports.</i> Established in 1963 to purchase and market diamonds. When small-scale mining was legalised in 1989 was licensed as the sole purchaser of diamonds and gold from ASM operations. Its monopoly lasted until 1999. Operates a network of 750 licensed buying agents and local offices throughout the country. The authorised business of PMMC is to: - Grade, assay, value and process precious minerals - Buy and sell precious minerals - Appoint licensed buyers for the purchase of precious minerals produced by small-scale miners - Promote the development of precious minerals and the jewellery industry - Export diamonds and gold on behalf of third parties for a commission.
Geological Survey Department (GSD)	<i>No real decision-making power as the GSD is a technical unit to the MLNR, often absent from policy debate and formation.</i> Principal curator of national geoscientific data, tasked with generating, collecting, storing, archiving and disseminating relevant geoscientific data for government, industry and public. Also mandated to improve knowledge of geology for small-scale miners.
Environmental Protection Agency (EPA)	<i>Relatively high-degree of power to operate autonomously under the direction of the Ministry of Environment, Science, Technology and Innovation. Able to award environmental permits for small-scale mining operations and prescribe associated fees without need to consult with the MLNR.</i> Public body for protecting and improving the environment in Ghana. Undertakes environmental impact assessments for operations, and awards environmental permits to small-scale miners.
Local Government Assemblies (Metropolitan, Municipal, District)	<i>Power to develop and implement policies at the local level, though for ASM this is left largely to the responsibility of the Minerals Commission, as well as mobilise police and authorities under their authority to manage activities.</i> The administrative and decision-making authority for the area, responsible for developing and implementing development programmes and activities. The District Chief Executive of the Assembly or their representative is appointed chairman of the Small-Scale Mining Committees which were established by the <i>Minerals and Mining Act, 2006</i> to 'assist the District Office to effectively monitor, promote and develop mining operations in the designated area' (p. 47).
Non-government	
Office Administrator of Stool Lands (OASL)	<i>Empowered to receive 10 per cent of revenues from the Mineral Development Fund the majority of which it then disburses directly to the local level chiefs with little oversight or accountability as to how it is spent.</i> Responsible for the collection and disbursement of stool land revenue as mandated by Article 267 of the 1992 Ghana Constitution and Act 481. This includes revenues from mining activities on the land which is held in customary ownership by the relevant local traditional authority.
Ghana National Association of Small-Scale Miners (GNASSM)	<i>Limited power to affect change but do have regular meetings with Minerals Commission and have been effective in certain campaigns.</i> - Fee-paying membership body representing the interests of licensed small-scale miners nationally and locally. Hierarchical membership structure comprising: 1) National Executive Council; 2) Nine District Chairmen; 3) Zonal representatives; 4) Licensed small-scale miners and ASM communities. - Holds a degree of legitimacy and power having voice and agency through quarterly meetings with the Minerals Commission in Accra, as well as regular interactions through the local district offices. GNASSM executives have also received technical training from UMaT alongside local government officials (Figure 4.3). - There is no requirement for a small-scale miner or member of GNASSM to be on a district Small-Scale Mining Committee nor any legal basis for their consultation or representation in policy and decision making. - GNASSM do not represent unlicensed miners or ASM communities, who remain essentially powerless and without any agency, and regularly distance themselves from unlicensed miners in their press releases.

Sources: *Minerals and Mining Act, 2006*; Fold et al., (2013); *Minerals and Mining (Amendment) Act, 2015*; GSD (2015); McQuilken and Hilson (2016); EPA (2018); MLNR (2018).

Figure 4.2 Regulatory and institutional structure of small-scale mining governance framework detailing 14-step process of obtaining a small-scale mining licence



Sources: EPA (2018); FES (2011); LAP2 (2018); MESTI (2018); MinCom (2018b); MLNR (2018). Note: step '13' is repeated twice as '12' and '13' occur in parallel.

Overall, despite the process being largely decentralised (administratively) through the local district offices, and earlier calls made in reports by the World Bank that ‘for the small[-scale mining] entrepreneur ... it is extraordinarily important that regulations in mining codes are clear, simple to understand, [and] concise’ (Nöetstaller, 1987, p. 30), as the description above and excerpts that follow illustrate, the licensing procedures in place for ASM in Ghana are overly-bureaucratic, time-consuming, costly, and burdensome. As a number of scholars (e.g. Hilson and Potter, 2003; Tschakert and Singha, 2007; Hilson and Okoh, 2013; McQuilken and Hilson, 2016) have reported over the years, these elements have, in combination, acted to further ‘informalise’ the sector. Interviews with a range of small-scale gold mining licence holders in and around Tarkwa during the course of research confirmed that this continues to be the case, contextualising the day-to-day realities facing individuals who aspire to transition into the formal economy. One miner, for example, captured succinctly how the complexity of the licensing process discourages miners from obtaining a licence, a problem brought about by the multitude of institutions involved:

Already in errr ... legalisation of small-scale, some institutions are involved. Those things are becoming now a bore ...err ... err... a problem ... because the cooperation between EPA [Environmental Protection Agency] and Minerals Commission too, and the small-scale miners themselves is a problem. How to get their permit is...is a big problem. Now, Water Commission too is coming in now. Now how to go there and get the permit from them too is another dis-thing. So, if you put or you engage lots of institutions in legalizing [licensing], I tell you, you are expanding the problem.⁴⁰

Another lamented over the length of time, from months to several years or more, it takes to receive a decision on a mining licence.⁴¹ The operator placed blame squarely on the centralised decision-making process (masqueraded as a *decentralised* setup) and unnecessary delays associated with needing to send the application to Accra for approval by the empowered Minister of Lands and Natural Resources:

No, what you are saying is 100 per cent correct, I have been in this system, I know it. Here you place an application, for a licence. And it takes you so long a time, sometimes even years, so what I see here: He has made his publications [21-day notice], signed letter written to the [District] Assembly by the Mineral Commission officer, application is done, ten to one days, it’s granted that nobody [is] on this site so they give their consent that papers can be processed, right. It goes to and you pay for whatever, bankers draft what you have to do, you send to Accra and then there the problem, it starts. Somehow even in the archives they even don’t know where those papers are. Some are sent to the Ministry for Lands and Natural Resources they do their small things and then bring it back to Minerals Commission but it takes sometimes not less than six years!⁴²

⁴⁰ Interview, 7th February 2015, small-scale mining licence holder.

⁴¹ The *Minerals and Mining Act, 2006* stipulates that the Minerals Commission should submit its recommendation to the Minister to award a licence within ninety days of receipt of application, and that the Minister should make a decision within sixty days of receipt of recommendation - a total of five months.

⁴² Interview, 16th September 2015, licensed small-scale mining and senior GNASSM member.

Another licensee, and his colleague, also a small-scale miner, highlighted in a heated exchange how the licensing process had recently become even more burdensome and costly as the EPA, in a thinly-veiled attempt to extract more revenue from small-scale miners through economic rents, had *increased* the fees associated with obtaining an environmental permit, and require prospective licensees to pay in US dollars:

Person 1: And as you said you know the ... the ... the various... ermm ...institutions which you engage now. You know the fees they are charging, they don't even call it tax or royalties, but the fees they are charging the small-scale miners is now becoming dis-incentives for legalisation ... Exorbitant fee charged by other institution; district assembly, EPA. EPA now is charging to [from] 750 [US dollars] [previously] to 2,400 errr ... err dollars ... yeah...

Person 2: Legalisation should be made less expensive!

Person 1: Minerals Commission will [should] make everything simple - come and pay 550 Ghana cedis as a consideration fee.⁴³

As confirmed by reports in the media and discussions with many other stakeholders at the time of the research (Awiah, 2015; GNA, 2015; GhanaWeb, 2015), the increase in fees from GHS 750 to USD 2,400⁴⁴ (USD 300 for processing and USD 2,100 for the permit) was later rescinded after several months of pressure and outcry from the Ghana National Association of Small-Scale Miners (GNASSM). This could have been entirely avoided if the relevant government agencies had consulted miners before increasing the fees. Indeed, despite GNASSM, at least on paper, appearing to hold legitimacy with government and having direct links to licensed small-scale miners on the ground through its network of fee paying members across the country (Table 4.3), a member complained during an interview that the EPA did not consult their association about the price hike:

No, nobody even consulted us, we normally went to have stakeholders meeting with them but then they avoid us and solemnly bring these things out to the fore. We [GNASSM] even wrote several letters this year to meet them. They never answered any of the letters. ... From local to national, and I happen to be a member of the National Executive (of GNASSM). So, the only thing we did recently that was only last month was to hold a press conference to express our views about this one ton increase in EPA. Not only EPA, the district municipal, or the districts too, the municipal assemblies are also increasing their prices anyhow. ... So, you are deterring people from even coming to register.⁴⁵

⁴³ Interview, 7th February 2015, small-scale mining licence holder.

⁴⁴ Equivalent to GHS 9,600 as per 2015 exchange rates.

⁴⁵ Interview, 16th September 2015, licensed small-scale mining and senior GNASSM member.

The lack of dialogue with GNASSM reveals just how out of touch, seemingly intentionally, many of the national-level regulatory institutions governing mining in Ghana are with the reality and dynamics of ASM on the ground. Furthermore, in a separate interview with a local-level EPA officer⁴⁶ whose office is embedded in the local community dynamics, it was revealed that they were also not consulted regarding the rise in fees. This fact was later confirmed at a workshop in Accra by a national-level EPA official⁴⁷ who recognised that there should have been proper consultations with the relevant ASM groups and at the grassroots level. These accounts highlight two key issues. On the one hand, they show that officials at these government institutions are, to a certain degree, aware of the significant policy debacle and disconnect between the national and the local level arms of the EPA. On the other hand, these accounts also highlight how little power and agency GNASSM has in decision-making. Despite being *the* national voice representing all licensed small-scale miners throughout the country and engaging proactively in formal dialogue with officials at key mining institutions in Accra (Table 4.3), the constraining opportunity structure has meant that even licensed small-scale miners have struggled to gain any real *agency* or *power* in policy debates and decision-making processes. This has left many even more disempowered and marginalised as a GNASSM member outlined:

And now the district and the municipal assemblies said they have mining subcommittees, and this mining subcommittees they don't even have miners in. And they tell you 'oh we had the minerals commission officer', the man is alone, he has to have reps [representatives] from the association and the association within the district has zonal reps, so that with [those] ones [you can] just call on their chairperson there, [to see] that is what is happening. And they can coordinate and pass on this information to the nation. So why don't we use this medium to let things work instead of having your own Assemblymen who don't even know anything about mining.⁴⁸

Fitting with De Soto's (1989; 2002) theory of *extralegality* (Chapter 2, Section 2.3.3), the bureaucracy of an inaccessible licensing process has, therefore, since its inception in the late-1980s, clearly acted to both preclude and deter miners from obtaining a licence. This, in turn, has pushed them further from legal frameworks, fuelling the persistent informality associated with the sector today. But why, despite clear evidence amassed over the past 40 years (see Chapter 2, Section 2.2.1 for a review) very clearly illustrating the sector's largely poverty-driven, diverse, and highly context-specific characteristics (Barry, 1996; Jennings, 2003; Fisher, 2007; Banchirigah, 2008; Hilson, 2010a; Van Bockstael, 2014; Hilson and McQuilken, 2014) and the desperate need for a policy response that empowers small-scale miners (Davidson, 1993; Hilson and Maponga, 2004; Hilson, 2007, 2016; McQuilken and Hilson, 2016; Mutemeri et al., 2016), have the reforms and licensing regimes implemented been so ineffectual in formalising the sector, and instead acted to further embed operators within the informal economy?

⁴⁶ Interview, 15th June 2015, local-level EPA Officer

⁴⁷ Interview, 22nd October 2015, national-level EPA official.

⁴⁸ Interview, 16th September 2015, licensed small-scale mining and senior GNASSM member.

4.2.3 A poor understanding of the livelihoods dimension

It is argued here that a third way in which mineral governance frameworks informalise the ASM sector across sub-Saharan Africa, including Ghana, is through *inaction*. Specifically, a lack of recognition (or downplaying) on the part of governments and policymakers of the livelihoods dimensions and its largely poverty-driven nature. As a result, rather than understanding and addressing the more fundamental barriers to formalisation associated with poverty, interventions and ‘assistance’ to the sector over the years has instead focused on the expressions of informality (Figure 4.3). A critical examination of this issue in relation to the most recent developments in ASM policy and mineral governance frameworks will therefore shed further light as to the reason why formalisation in the region, as well as in Ghana, remains so elusive (Objective, 1). When asking any small-scale miner in Ghana about the reasons why the majority of operators do not hold a licence the most common answer, without fail, refers to ‘a lack of money’ or as one individual explained in an interview ‘it is all because of poverty in Ghana here’.⁴⁹ However, despite the clarity with which the issue of formalisation is understood by the communities themselves, the poverty-driven component of ASM was not recognised among policymakers until the late 1990s when reports such as the International Labour Organisation’s landmark *Social and Labour Issues in Small-Scale Mines* highlighted the following (ILO, 1999):

Many projects to assist small-scale mining have failed or have not led to lasting improvements because they have treated small-scale mining as a subset of large, formal mining. For the most part, emphasis has been on finding technical solutions to mining and processing problems, with scant heed being paid to the underlying economic, labour and social issues. Another factor in their relatively short-lived success has been the low priority given by governments to small-scale mining. So once a project has been left to stand on its own, it has often gently wound down due to a lack of continued government support or supervision. Fortunately, the relatively recent recognition that much small-scale mining is closely related to poverty has led to a reorientation of assistance programmes to ensure that the underlying social aspects are included when assistance is provided, giving a greater chance of sustained improvements being achieved (ILO, 1999, p. 72).

The report underscored what continues to be the dominant feature of the ASM sector today: its ability to provide a dependable livelihood to upwards of 30 million people facing hardship in impoverished landscapes across rural sub-Saharan Africa. It appeared the message from the burgeoning ASM literature and in-depth case studies emerging at the time that demonstrated the sector is largely poverty-driven (Chapter 2, Section 2.2.1) was at least starting to get through to international organisations. Following a decade of ineffective technical interventions that failed to account for the social aspects of small-scale mining operations (Mugova, 2001; Hilson, 2002; Hilson and McQuilken, 2014), the reoriented rhetoric in the late 1990s, buoyed by the emergence of the Sustainable Livelihoods Framework (Scoones, 1998) and a shift towards a more people-centred, bottom-up approach to development (see Section 2.3.4), was also having a positive influence on international donors, and, seemingly, helping policymakers better

⁴⁹ Interview, 12th September 2015, small-scale miner renewing licence at a district centre.

understand the drivers of informality and subsequent growth of ASM over the preceding decades. The launch of the United Nations Department for Economic and Social Affairs (UNDESA) USD 280,000 project *Poverty Eradication and Sustainable Livelihood: Focusing on Artisanal Mining Communities* in the year 2000,⁵⁰ and shortly afterwards the World Bank-funded *Communities and Small-Scale Mining* (CASM) initiative which had a distinctly livelihoods-based message at its core,⁵¹ were further signs of this renewed commitment and understanding (Hinton, 2005; Hilson and McQuilken, 2014).

4.2.3.1 A misguided focus on the ‘entrepreneur’ and ‘expressions’ of informality

But, the increased recognition of the sector’s livelihood component has failed to facilitate marked changes in strategy. As the timeline of assistance to small-scale miners in places such as Mali, Tanzania, and Zimbabwe shows (Hilson, 2007), as well as the actions taken in Ghana over the past four decades, there continues to be a strong focus on licensed operators and technical training designed for the entrepreneur (Figure 4.3). Beginning in the 1990s, a series of pilot projects were implemented for the ASM sector in Ghana. These aimed to introduce equipment such as water pumps, shaking tables, and ball and hammer mills to improve the efficiency of operations as well as retorts for the safe processing of mercury. Yet, each case was a failure due to a poor understanding of the needs and livelihoods of those populating small-scale mineral production networks, and a focus on the licensed, so-called, small-scale mining entrepreneur. For example, the 10 water pumps (5 hp) purchased in 1991 with support from the German Organisation for Technical Cooperation (GTZ) and leased for a small fee from the Tarkwa and Assin Fosu district centres were too small to use near fast flowing rivers. This meant they were operated overnight to ensure pits were empty by the morning, which led to many overheating and burning out. As a result, miners were unable to extract gold to make their payments and cover the additional costs for repair. Similarly, an equipment hire-purchase scheme instigated by the Minerals Commission between 1993 and 1997 roundly failed due to the lack of experience the Central Regional Development Commission (CEDECOM), the technical office tasked with the design and implementation, had with ASM, having only previously engaged with small-scale fish mongers and farmers. As a result, the wrong type of equipment required was provided and CEDECOM instigated an impossible financing model for ASM that required repayments be made within one year regardless of mineral output. In a third example, a hammer mill brought over from Brazil by the German Federal Institute for Geosciences and Natural Resources (Bundesanstalt für Geowissenschaften und Rohstoffe – BGR) in 1998 and installed in the Bolgatanga district centre was soon out of use as the frequent wear made shipping in replacement parts from overseas too expensive (Yakubu, 2003; Hilson and Pardie, 2005). Again, all of these interventions failed because they did not fully take account of the livelihoods dimension.

⁵⁰ The project focused on sub-Saharan African and aimed to develop ‘a set of policy options and best practices’ that ‘contribute towards poverty eradication’. It culminated in an international workshop in Yaoundé, Cameroon in November 2002 to share findings and mobilise additional funding, the output of which was the ambitious *Youndé Vision Statement* to ‘Contribute to sustainably reduce poverty and improve livelihood in African Artisanal and Small-scale Mining (ASM) communities by the year 2015 in line with the Millennium Development Goals (UNECA and UNDESA, 2002, p.2).

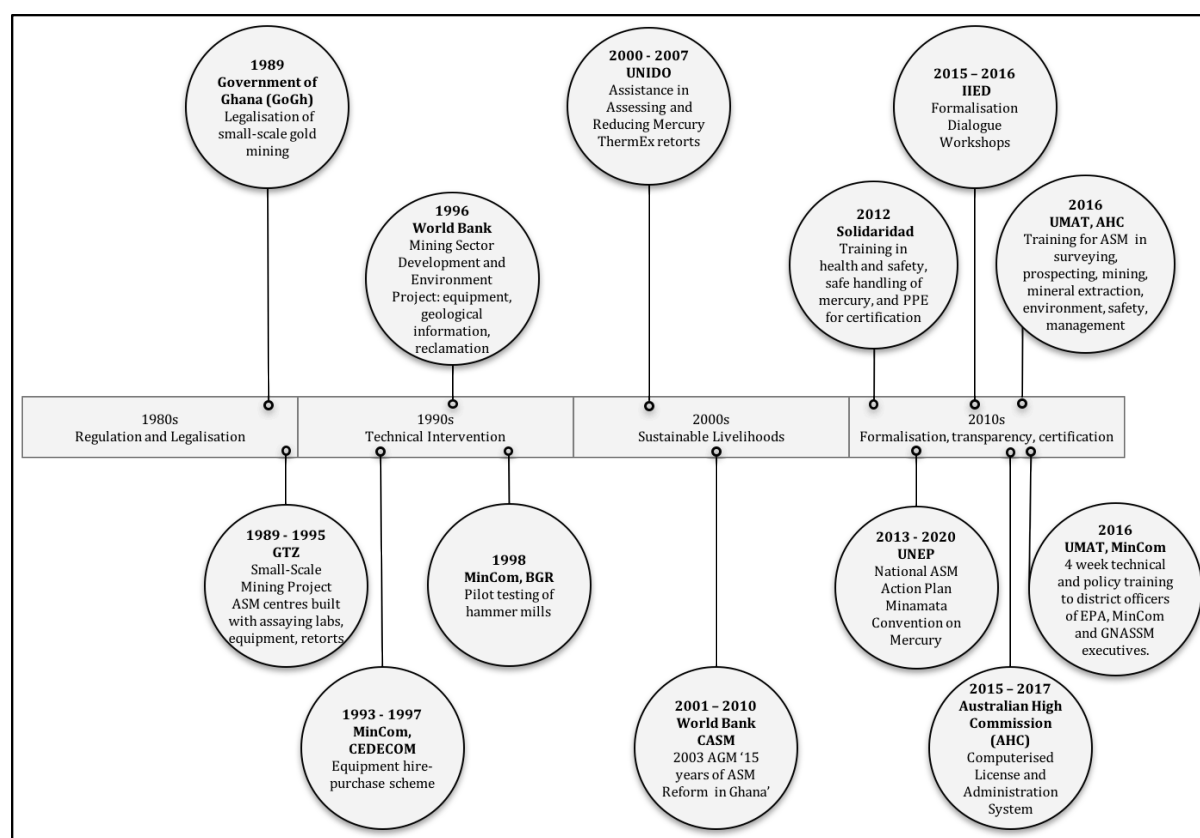
⁵¹ CASM was borne out of discussions at a number multilateral ASM workshops in the 1990s. The initiative ran between 2001 and 2010 and focused on mitigating negative environmental, social, and health impacts of activities, improving productivity and governance, and developing alternative livelihoods for miners (Hinton, 2005; Hilson and McQuilken, 2014).

Responding to the 'expressions' of the sector's informality in this way, rather than attempting to understand and address its root causes has facilitated little change on the ground. Similarly, the introduction of equipment to ensure the safe handling of mercury and mitigate the disastrous health and environmental impacts associated with its improper and dangerous use have also been a prominent feature of interventions for the ASM sector over the decades. There are several instances which can be drawn upon to illustrate this. For example, the introduction of retorts by GTZ in 1993, in 1993, and again by the United Nations Industrial Development Organization (UNIDO) via the *Assistance in Assessing and reducing Mercury Pollution Emanating from Artisanal Gold Mining in Ghana* in the 2000s, largely failed due to a poor understanding of the livelihoods dimension, and a focus on the wealthier 'entrepreneur'. Miners complained that the retorts from GTZ took too long to heat and the opaque metal container meant they could not see what was happening to their gold. Officials at the UN, taking on board these issues, would later commission the design of the ThermEx® retort, a device unveiled officially by UNIDO and made of glass so that 'miners can inspect the condensation process ... [and] trust all the gold is recovered' recovered' (Veiga, 2004, p. 30). But at the same time, being fabricated from glass meant they were fragile, with many cracking due to frequent heating and cooling as well as from being dropped accidentally at mine sites. They also have a low capacity (<30g of gold amalgam), and being manufactured abroad by Munich-based company Metall-Technic meant the cost of purchase and replacement parts was exorbitant. This was despite the retorts being subsidised by the Minerals Commission, which helped reduce the cost to miners from USD 500 to USD 50, but was a sum that still remained well beyond the financial means of the vast majority as well as being an unsustainable financing model (Yakubu, 2003; Hilson and Pardie, 2005; Hilson, 2007). In each instance, however, a better understanding of the functioning of mineral production networks and the needs of miners would certainly have made the interventions more effective, perhaps even helped to target informal miners, and more than likely would have prevented the series of mishaps outlined. By not accounting for the livelihoods dimension and focusing efforts on licensed miners, policymakers have therefore done little to address the root causes of ASM's perpetual informality.

Over the past five years, aside from a dialogue workshop coordinated by the international NGO, the International Institute for Environment Development (IIED), which facilitated discussions on formalisation between stakeholders including miners, communities and officials (McQuilken and Hilson, 2016), the focus has once again been on supporting licensed operators and mercury abatement. The Australian High Commission in Ghana (AHCG) in tandem with the Revenue Development Foundation (RDF), for example, developed an online system for managing the large-scale mining licence process and is extending it to include ASM (AHCG, 2015; McQuilken and Hilson, 2016; MinCom, 2018a). However, though commendable and certainly a step towards facilitating a more streamlined approach to licensing, unless time is taken to put in place the necessary support at the local level for miners and *galamsey* operators with little agency, the system will only be accessible to the more empowered operators who are able to reach and navigate the internet. Similarly, the other activities being undertaken in recent years have also catered solely to the licensed small-scale mining entrepreneur. The list includes technical

training workshops on surveying, prospecting, mineral extraction, management, health and safety, and the environment (McQuilken and Hilson, 2016; UMaT, 2016a; 2016b). The latest development, the United Nations Environmental Programme's Minamata Convention on Mercury, which requires countries to reduce and where feasible eliminate the use of mercury in ASM through the implementation of a National Action Plan that includes measures for facilitating formalisation (UNEP, 2013), also focuses on addressing the expressions of informality – in this case mercury pollution – rather than the drivers. The delivery of assistance to ASM in Ghana over the past four decades has, therefore, helped to ensure the sector has remained largely confined to the informal economy. The reluctance of donors and policymakers to recognise, in its entirety, the livelihoods dimension of the sector, and their conscious decision to focus on technical support designed with the notion of the licensed 'entrepreneur' in mind, has been responsible for this.

Figure 4.3 Delivery of assistance to ASM in Ghana



Sources: Yakubu (2003); Hilson and Pardie (2006); Hilson (2007); Hilson and McQuilken (2016); McQuilken and Hilson (2016); UMaT (2016a; 2016b).

4.2.3.2 Policy 'flip-flopping'

Without a coherent and consistent policy foundation that focuses on supporting unlicensed operators and is built on an understanding of the sector's livelihoods dimension, many countries have struggled to develop mineral governance frameworks that facilitate the formalisation of ASM. Instead, successive governments have been left relatively unguided and free to change direction in their approach to managing the sector. In Ghana, though perhaps coincidental, the importance of the ASM sector to rural

livelihoods and its poverty-driven nature, was, in part, recognised in the country's first Poverty Reduction Strategy Paper (PRSP).⁵² It stressed the importance of addressing the 'apparent imbalance' between large-scale mining and artisanal and small-scale, a gulf created by the aforementioned mining sector reforms (IMF, 2003, p. 91). Yet, just three years later, in the country's second PRSP, which covered the 2006–2009 period, the ASM sector is referred to as a 'menace' in need of 'control' (NDPC, 2005, p. 116). Another three years later, and, despite only four references made to the sector, policymakers had taken yet another U-turn in its approach, recognising in the 2010 PRSP the need to 'improve support to small-scale miners and explore mechanisms to encourage increased regularization...including a review of procedures for obtaining small scale mining licence' NDPC (2010, p. 150–151) (Table 4.4). This policy 'flip-flopping' is also evidenced through the timeline of assistance (Figure 4.3) and key small-scale mining initiatives (Table 4.5) which range from delivering support to licensed operators and promoting ASM on the one hand, to draconian military-style exercises on the other hand.

Table 4.4 'Flip-flopping' of ASM policy featured in national development plans

PRSP	The only extracts referring to small-scale mining
Ghana Poverty Reduction Strategy An Agenda for Growth and Prosperity 2003–2005	Current mining laws tend to disproportionately favour large-scale mining enterprises. To address this apparent imbalance, measure will be put in place to expand the scope and increase the support to small and medium scale sub-sector with the view to making it the predominant means of exploiting minerals in the long term. These measures include undertaking geological field studies in identified areas that have been found to be unsuitable for large-scale mining operations and classifying areas as either suitable for either small, medium or large-scale mining operations on the basis of geological assurance
Growth and Poverty Reduction Strategy (GPRSII) 2006–2009	- Control the menace of mining (especially illegal mining) (NDPC, 2005, p. 89). - Adopt or enforce collaboration between EPA [Environmental Protection Agency] and MMDAs [Metropolitan/Municipal/District Assemblies] to better manage natural resources, environmental health and illegal mining.
Medium-Term National Development Policy Framework: Ghana Shared Growth and Development Agenda 2010–2013	- Improve the capacity and the operations of the small-scale mining sector, and reduce illegal artisanal mining (<i>galamsey</i>). - Improve support to small scale miners and explore mechanisms to encourage increased regularization of small scale mining (especially legally registered). - Production of new processing equipment (<i>Sika Bukyia</i>) and education of small scale miners in use of new method. - Control the negative effects of mining (especially illegal mining). - Vigorously pursue reclamation and plantation development in areas mined-out by illegal miners. - Develop the mechanisms to encourage increased regularization of small-scale mining, including a review of procedures for obtaining small scale mining licence.

Sources: IMF (2003, p. 91); NDPC (2005, p. 116); NDPC (2010 p. 150 – 151).

However, despite, as Table 4.4 shows, the most recent PRSP including measures such as 'a review of procedures for obtaining small scale mining licence', the overall 'hotchpotch' of ideas, in what are high level national development plans, it is argued alongside several scholars (Hilson and Okoh, 2013, p. 145; Hilson and Hilson, 2015), rather signals a wider confusion, misunderstanding, perhaps wilfully, and lack of cohesion amongst policymakers and institutions in Ghana. This confusion stems from a poor understanding, or downplaying, of the livelihoods dimension of ASM. National-level policymakers have, therefore, promoted, often with minimal scrutiny, the idea that they are dealing with a 'rush-type' activity populated exclusively by get-rich quick criminals and enterprising businesspersons and at times – and quite inexplicably – criminals. The situation, as explained in Chapter 2 and will be further elaborated on

⁵² Replacing SAPs, PRSPs are three-year national development plans developed in a broadly participatory approach between governments, the World Bank and the International Monetary Fund (see Chapter 2, Section 2.3.4 for a detailed overview).

in the latter parts of this thesis, however, is very different: ASM in Ghana and for the most part, sub-Saharan Africa, is populated largely by impoverished groups of people who find themselves confined to the shadow economy because of a shortage of mineralised land; an inaccessible licensing process; and a lack of empowerment within, and marginalisation from, policy debates. Referring back to Objective 1, it becomes clear, after reviewing developments that have taken place in Ghana's ASM regulatory landscape in recent decades, that a poor understanding and consequently, a 'confused' policy approach, has created conditions which have nurtured the growth of informal ASM activities.

The most recent development, the *Minerals and Mining Policy of Ghana* (2014), which was publicly launched by the Government of Ghana in 2016, almost 20 years since it was first drafted in 1999 (Table 4.5), captures the essence of the 'mindset' of the country's policymakers towards ASM. The policy has an explicit business-like tone. This includes most of Section 9, 'Promotion of efficient artisanal and small-scale mining operations', which is the only part of document dedicated to the sector and is three pages long:

Government recognises that small-scale mining operations undertaken by Ghanaians offer opportunities to support rural livelihoods, develop entrepreneurship and provide a source of industrial raw materials. However, small-scale miners must be assisted in their efforts to operate in a technically, economically and environmentally sustainable manner (Government of Ghana, 2014, p. 35).

It goes on to outline a number of measures 'intended to enhance the growth and opportunities of the small-scale mining sector' such as 'tailored assistance in basic business skills' and 'simplified procedures for applying for ... licences' (Government of Ghana, 2014, p. 35). There are two issues to consider here, the first being the lack of priority given to ASM, coverage of which is, again, a mere three pages. Given how much attention ASM has garnered in Ghana, politically, in recent years, there is simply inadequate coverage given to, and too much downplaying of, the formalisation of the sector, including many of the issues examined in this chapter. The second is the obvious confusion detectable in the text over what the government believes it is formalising: mentioning, on the one hand that there is a need to streamline licensing for the sector, in turn, insinuating that it recognises the need for a more user-friendly framework and is inadequate, but on the other hand, ushering in a blueprint which, judging from most of the language used, is written for the entrepreneur. As more than 70 per cent of Ghana's ASM operators are operating without a licence (Crawford and Botchwey, 2016; McQuilken and Hilson, 2016), more comprehensive policy frameworks which speak to the realities on the ground are needed if the sector is to be formalised.

Table 4.5 Key small-scale mining policy initiatives in Ghana

Year	Government initiative	Description
1989	Small Scale Mining Project (SSMP)	Funded by the German Technical Cooperation (GTZ) a series of local ASM administrative centres run by the Minerals Commission were established in key mining areas, such as Tarkwa, to provide access to equipment such as pumps, sluice boxes and pick axes. However, equipment was priced too high for the majority of small-scale miners, meaning little was purchased and it was later sold off at a loss.
1989	Establishment of small-scale mining district support centres	The <i>Small-Scale Gold Mining Law, 1989</i> established small-scale mining district support centres in designated small-scale gold mining areas to: compile register of prospective miners; supervise and monitor activities; advise and provide training facilities; provide reports to the Minerals Commission and data on mining activities as required.
2005	Promotion of sustainable small-scale gold mining operations	Identified three areas in Western Region and Winneba in Central Region to be reserved for small-scale mining operations.
2006	Formation of Small-Scale Miners Associations	The <i>Minerals and Mining Act, 2006</i> included provision that district centres should 'facilitate the formation of Small-Scale Miners Associations'.
2006	Fight Against Illegal Mining	Financed by Ghana's main large-scale mining companies through the Ghana Chamber of Mines, and implemented by the Ghana National Security Council, the Army undertook sweeps in key mining areas to suspend unlicensed mines, confiscate and destroy equipment, and arrest those involved.
2012	Procurement of equipment	Provided support to purchase equipment and working capital.
2013	Inter-Ministerial Task Force	Presidential directive establishing an Inter-Ministerial Task Force to seize equipment and arrest and prosecute unlicensed small-scale miners and non-Ghanaians (mainly Chinese) involved in illegal operations.
1999–2016	Minerals and Mining Policy of Ghana	A broad policy document to guide the government in the management of minerals and mining with explicit objectives and recourse to the artisanal and small-scale mining sector. The policy was initially drafted in 1999, completed in 2001, and following consultations with stakeholders was finalised in 2014 and launched publicly in 2016.
March 2017–2018	Ban on all ASM activities	Minister of Lands and Natural Resources enacts six-month ban on all small-scale mining activities, as well as issuing of new and renewing of old licences in late March 2017 in an attempt to 'formalise' the sector by first 'sanitising' it. The ban was extended by a further three months in October 2017 and remains in place as of February 2018.
August 2017	Operation Vanguard	Minister of Mines and Natural Resources brings together 400 security personnel drawn from the Ghana Armed Forces and Police Force to shut down unlicensed mining activities through confiscating and destroying machinery, closing mine camps, and arresting operators.

Sources: *Small-Scale Gold Mining Law, 1989*; Hilson (2001, 2002); Aryee et al., 2003; Hilson et al., (2007); Government of Ghana (2014); ICMM (2015); Hilson and McQuilken (2014); MLNR (2016); *Minerals and Mining Act, 2006* (Act 703); Hilson (2017b); Nyabor (2018).

The fieldwork undertaken as part of this thesis between 2014 and 2015, and the political debates that have since intensified in Ghana over *galamsey*, further underscores the need for a coherent and consistent national policy framework that adequately accounts for the livelihoods dimension of ASM. One government official⁵³ reflected on this in an interview, outlining a number of key tasks that must be undertaken if this gap is to be bridged:

- Review of the current mining legislation to make it clearer and more 'robust and potent' in order to 'guide' artisanal and small-scale miners towards formalisation.

⁵³ Interview, 15th September 2015, government official.

- Look at ways to improve governance through training and decentralisation of key parts of the licensing process in recognition that ‘the District have not been able to move when something is wrong due to lack of responsibility’.
- Reclassify the artisanal and small-scale mining licence categories to include two new categories of licences, namely: 1) ‘artisanal’ to allow for operations using very basic equipment; and 2) ‘medium-scale’ to allow for greater use of machinery and foreign involvement in order to ‘accommodate’ the influx of illegal Chinese miners in recent years. These new categories would be in addition to the current ‘small-scale’ and ‘large-scale’ classes of licence.
- Continue development of an on-line licensing and concession management system currently being undertaken with support of the Australian High Commission.
- Develop a GPS tracking and tagging system for excavators and earth moving equipment used in small-scale mining operations so that their use may be better monitored and taxed.

A number of these points appear, at least superficially, to be a move in the right direction, a case in point being a push to decentralise the licensing process to make it more accessible to prospective licensees. Others, however, are disconcerting, potentially further informalising the sector. An analysis of the more recent policy developments in this area, therefore, provides a lens for contextualising the current status of the national governance framework in place for ASM (Objective 1) and for reflecting critically on how it is potentially further ‘informalising’ the sector. This is also the ‘space’ in which certification initiatives will need to be implemented if they are to have any chance of facilitating transformational change in the livelihoods of those in the greatest need of support.

4.2.3.3 The propensity for rent-seeking

But instead of proactively developing and supporting ASM in a way that that is built on the recognition and understanding of its livelihoods dimension, the government appears to have become preoccupied with rent-seeking; this is a problem which plagues extractive industries governance across sub-Saharan Africa. The Government of Ghana appears disinterested in trying to *create* and *enhance* value in ASM through implementing more innovative bottom-up policy initiatives that connect with miners in informal spaces along the lines of that described in Chapter 2. It instead, as the official’s key tasks outline, rather seems more focused on promoting a licence which ‘legitimises’ *hitherto* illicit Chinese involvement in the sector and implementing a tracking/tagging system for heavy mining equipment, moves that will not necessarily formalise the sector’s poorest segments but will, indeed, generate revenue. This short-termism could also have significant negative impacts on the sector’s development over the long term. In the first instance, formally opening up the ASM sector to foreign actors with significant agency would put artisanal and small-scale miners in an even more disadvantageous position when negotiating access to concessions. In the second instance, taxing and placing greater constraints on the use of machinery and equipment could prove counterproductive, given miners’ desperation to improve the efficiency of their activities and their livelihoods, and the government’s apparent desire to curb the sector’s environmental impacts (see Mutemeri et al., 2016; Chapter 2, Section 2.2.1). This begs the question: where are these policy ‘ideas’ originating?

Despite there not being a coherent international policy foundation in place for ASM over the years, there has been one for the large-scale mining sector. This message has been one of taxation and rent-seeking and, it is argued here, is where many national level policymakers, in countries such as Ghana, appear to have drawn significant inspiration for managing their small-scale mining sectors. As Table 4.6 shows, the international development model for large-scale mining since the late-1980s has been one of privatisation, liberalisation, and the collection of royalties and taxation as the primary means of capturing value from the sector. This approach continues today, though with an increasing focus on ‘good governance’ and transparency as well as moves being made towards increased local involvement (see McMahon (2010, p. 7) for a chronology of World Bank support to the mining sector). The roots of this rent-seeking in ASM, it is argued, have therefore been heavily formed by the policy initiatives in place for large-scale mining combined, again, with a lack of recognition of the livelihoods dimension.

Table 4.6 Examples of consistent ‘taxation’ message for the minerals sector in World Bank reports

Year and report title	Examples of taxation message (direct quotes)
1992 <i>Strategy for African Mining</i>	[T]he recovery of the mining sector in Africa will require a shift in government objectives towards a primary objective of maximizing tax revenues from mining over the long term ... in the new policy environment, governments should obtain a fair share of the economic rent of the sector through fiscal arrangements that are stable, competitive and fair, rather than through ownership and operation.
2010 <i>The World Bank's Evolutionary Approach to Mining Sector Reform</i>	Ample evidence exists that countries which adopt modern mining legislation and offer attractive enabling environments can attract private sector investment in mining exploration and production. This, in turn, provides tax revenues, export earnings, employment opportunities, infrastructure development in rural areas, and transfer of technology to the host countries.
2014 <i>The Contribution of the Mining Sector to Socioeconomic and Human Development</i>	In many countries, substantial linkages have been developed from mining operations and tax revenues are increasing to build national and local capital, both physical and human.
2017 <i>Oil, Gas, and Mining A Sourcebook for Understanding the Extractive Industries</i>	The EI [extractive industries] Value Chain emphasizes five distinct but related features in the sector management process (Alba 2009). Every resource-dependent state has to move through each of these if resource-led development is to take place. They cover (1) the establishment of a legal framework that will convey and enforce rights to investors within a broad policy for development of publicly owned resources, (2) the institutional organization of the sector and particularly the regulation and monitoring of operations in the public interest, (3) the design and collection of taxes and royalties, (4) revenue management and distribution, and (5) the implementation of sustainable development policies.

Sources: World Bank (1992, p. x); McMahon (2010, p. 3); McMahon and Moreira (2014, p. 46); Cameron and Stanley (2017, p. 11).

However, while the approach of taxation that has been taken may have been at least partially successful for large-scale mining, as the following examples illustrate, it has yielded little success for the ASM sector. Instead, by failing to account for the livelihoods dimension and ‘scaling down’ (Mutemeri et al., 2016) large-scale mining regulations to fit ASM, it is argued, national level policymakers have further informalised the sector by catalysing a behaviour of rent-seeking and taxation throughout the government agencies and multitude of local level actors that comprise these mineral production networks. As such, rent-seeking as a form of ASM governance is found to operate in both the formal and informal segments of the sector, and at all levels of the network.

One significant example, which has also been touched on previously (Section, 4.2.2), is the decision by national-level EPA officials to suddenly increase the price of the environmental permit for ASM without any consultation. When this is conceptualised through the lens of rent-seeking, it is clear that the decision taken was due to the need for the agency to create and capture more value rather than a desire to improve environmental conditions or performance of the sector. This was later confirmed in an interview with an EPA official in Accra who explained that the rise in fees was instigated due to the need to increase more internally generated funds.⁵⁴ This type of rent-seeking behaviour which is driven by budgetary pressures, as opposed to increasing revenues to then re-invest in and develop support services for the ASM sector, also occurs at the local level. An interview with a local municipal government official demonstrated how the inadequacy of locally generated funds, which are captured through taxation of activities in the district, are insufficient to cover the costs of running the Assembly. This has meant that 'common funds' from central government which are meant to be assigned for undertaking development activities have instead had to be diverted to pay for administration:

A chunk of our money comes from our common fund. Then the IGF, what we call the Internally Generated Fund, these are the main sources of our fund. So, the IGF you know it has to do with property rate, tolls for the market, for the lorry park, permits all those things. Aha. But mostly the IGF is inadequate, the IGF is what we use to run the office. Either it is about paying casuals, you know we have casuals, apart from those on government payroll, we have casuals, it is about paying casuals, it is about running the office in terms of stationary errm the maintenance of our vehicles, fuel all those things when people are going for workshop and things, everything is financed through the IGF. We are supposed to use the common fund specifically for development. But you go to some Assemblies you realise that the IGF is no good, so mostly they depend so much on the common fund for their day-to-day running of the Assembly, as we sit here, for the past few months we have been restricted to depend on 20 per cent of the common fund for our administration purposes.

Set against this background, and in their desperation to capture more locally generated funds, it is no wonder that many local government assemblies despite, as outlined, being aware of the challenges faced by impoverished operators, have been driven to seek innovative measures to increase their local tax base. As the extract from an interview with a frustrated and tiresome licensed small-scale miner illustrates, the ASM sector, with its low-level development priority, has been easy pickings for local government forced to extract rents in order to boost internally generated funds:

They [the District Assemblies] are giving you stickers, if you work here any excavator you bring down you have to pay between, err now it's even 20 Ghana cedis, no it's 2,000 Ghana cedis per excavator and if you move your excavator from this point to another district if, even if the excavator works for only a week or two and you move it to the next point you have to pay another

⁵⁴ Interview, 22nd October 2015, national-level EPA official.

fee, another sticker fee which we also thought is another killer, because you come to the argument that 'well, if I insure my car, my car moves anywhere in the country and my insurance is covered for a whole year so why does [my excavator]?' And they are unable to give you any tangible reason they tell you 'oh. we are raising, trying to raise funds for the District'.⁵⁵

However, this rent-seeking behaviour is not just confined to the formal economy. The informal nature of ASM activities has led to an entire suite of local level actors regularly extracting significant sums of money from operators. Again, the same licensed small-scale miner and member of GNASSM explained the difficulties faced with the police when transporting equipment:

The police now, even when you are transporting your excavator from one place to another almost any police check point you will pass you have to pay money. They have their own rate also. You pay between 200 and 500 Ghana cedis. Yes! And then, even when you are transporting diesel and this hundred litre, 1,000 litre containers each container the police man charges you at every point. Any point that you meet them. They charge you for 20 Ghana cedis – each! And then I ask them, so are we free in our own country?! You want me, you don't even want me to work. Because I am transporting an excavator to a place you charge me every check point. And it goes into your pocket no receipt.⁵⁶

As the extract shows, corrupt, rent-seeking practices like this are certain to cause tension and mistrust between government enforcement and security personnel, and small-scale miners, as well as enable informal practices to flourish in the sector. It also has the effect of undermining government agencies and institutions and driving a gap between small-scale miners and government. In a similar way to the rent-seeking practices of local level agencies 'on the ground', Ghana's chiefs also regularly extract resource rents from small-scale miners despite not having any legal entitlement to do so.

The recent passing of the *Mineral Development Fund Act* (2016) has acted to empower Ghana's chieftaincy at both the national and local level helping to further embed ASM in the shadow economy. The Act provides the legal basis for the disbursement of royalties from large-scale mining,⁵⁷ 20 per cent of the total of which are dispensed into the Mineral Development Fund (MDF) which is designed to finance projects in communities affected by mining and provide budgetary support to key agencies (Table 4.2). Of the 20 per cent dispensed into the MDF, half is divided between mining sector agencies including the Ministry of Lands and Natural Resources, Minerals Commission, Geological Survey Department, and various research institutions. The remaining half (10 per cent of total mine revenue) is transferred on a quarterly basis to the Office of the Administrator of Stool Lands (OASL) which is responsible for the collection of revenue from stool land that is held in customary ownership by Ghana's chiefs (Table 4.3). The OASL then dispenses this money directly to beneficiaries at the grassroots level, as outlined in

⁵⁵ Interview, 16th September 2015, licensed small-scale mining and senior GNASSM member.

⁵⁶ Interview, 16th September 2015, licensed small-scale mining and senior GNASSM member.

⁵⁷ Royalties were formerly five per cent of company profits but now set at a rate prescribed by the empowered Minister for Lands and Natural Resources)

Section 267(6) of the 1992 Constitution of Ghana: OASL retains 10 per cent of the monies to cover administrative expenses; 25 per cent is provided to the traditional authority for 'the maintenance of the stool'; 20 per cent is given to the traditional authority [the chief] himself; and 55 per cent is awarded to the relevant district assembly located within the area of authority of the stool lands. Chiefs therefore 'handle' 4.5 per cent of *total* mine revenues generated from large-scale mining in the country, the management of which, for the most part, goes unscrutinised. But turning a blind eye to this at the national-level has also enabled chiefs to simultaneously immerse themselves in the informal mining economy extracting rents and brokering the day-to-day transactions of individual operators at the local level (Mahama and Baffour, 2009; Standing and Hilson, 2013; Hilson et al. 2014; Hilson and Hilson, 2015; McQuilken and Hilson, 2016; Crawford and Botchwey, 2016). These types of informal rents pose a grievance and are a formidable obstacle to even the most well-connected and licensed 'necessity-driven' and 'opportunistic entrepreneurs' (Chapter 2, Section 2.2.1) let alone the majority of impoverished informal *galamsey*⁵⁸ operators who lack the *agency, power*, and financial and social capabilities needed to navigate the system and acquire a licence in the first place.

But what has been the effect of this rent-seeking on the ASM sector? Faced with government agencies that have a propensity for rent-seeking, Ghana's small-scale miners have been forced to look for alternative means of support. Despite being aware of their presence, what the official in their list of key priorities outlined above, and wider Government of Ghana fail to recognise, however, is that the growing presence of Chinese businesspersons in the ASM sector is very much an expression of its informality, and a product of its neglect in policy and dearth of state support initiatives over the years. As a number of case studies in Ghana (e.g. Hilson et al., 2014; Crawford and Botchwey, 2016) as well as the findings from this research show, faced with an opportunity structure that does little to support and empower both licensed and unlicensed miners, the influx of foreigners into the ASM sector has been a much-needed source of finance to sponsor activities, as well as technology and knowledge transfer in the form of affordable, and more efficient and effective, mining and processing techniques. At least one local government official was able to overlook the illegality and reflect on this:

What I have personally realised, it is not the view of the Assembly, what I have realised is that most of the people do not have the required capital to do the job but they have the lands so there is like kind of enter into agreement with these foreigners mostly the Chinese. So, they bring you their machines and that is what I have realised.⁵⁹

In sympathising with the needs of miners, the extract from this local-level official once again (see Section 4.2.2 with regards to the rise in EPA fees) reinforces the significant disconnect between national-level agencies and policymaking, and the reality of dynamics on the ground that show the importance of ASM

⁵⁸ *Galamsey* is the term used to refer to informal artisanal miners in Ghana, and is an amalgamation and adulteration of the phrase 'gather and sell'.

⁵⁹ Interview, 15th September 2015, local government official.

to rural livelihoods, as clearly understood by government stakeholders who are embedded within and indeed a part of the communities.

The following description of activities, and extract from an interview conducted while on a tour of a licensed small-scale mine, further illustrates just how important Chinese involvement in the ASM sector has now become. Simultaneously, it also demonstrates the expansive gap between the dearth of state-support for the sector versus the needs of small-scale miners who are desperate to improve the efficiency of their operations, and ultimately create and capture more value from their activities. While visiting the site in Tarkwa, which had been in operation for 16 years (1999 to 2015), it was revealed that four different types of technology were brought in by the Chinese to speed up processing. Two were being used *in-situ* to process hard rock ore, replacing the manual and time-consuming labour relied upon to crush rocks and representing a form of *value upgrading* (Chapter 2, Section, 2.3.5, Table 2.7):

That is the *Chang-fa*, it is a Chinese invention, it is a crusher. We use it to crush the stones. We buy it from the Chinese. Right now, the whole set is 2,800 [GHS]. The engine alone is 1,650 [GHS]. You can buy it separately, you can buy the whole set. Before the Chinese, we use err bars, metal bars, bars to beat the stone, and then we beat it up for some time and the stones some of them will crush and will turn into powder, then we use some metal sieve to sieve it. Just to get let's say in the smaller microns that we can introducing appropriate legislation that is tailored to the needs of artisanal and small-scale miners, and implementing public policy and programmes for ASM, they will no longer be forced to operate it and get the gold. Err the Chinese, from the alluvial perspective they have gravel pump or gravel sucker. We have dredge. And then they have another washing plant, that is trommel,⁶⁰ China type trommel for alluvial. The Chinese people invented all these machines that I mentioned. It's only *Chang-fa*, this machine, and then the trommel, trommel is more than anything, but it's only these two machines that can, I mean err, that we can use for the hard rock. But how many percent of the gold that we recover from the these is very low. We want good machines that can help us extract at least 50 to 70 per cent of gold. But right now, according to the UMaT [University of Mines and Technology] people they said we recover about err 25 to 30 per cent of the gold and that we just waste the 70 per cent.⁶¹

Situated in a government opportunity structure that prioritises rent-seeking over sufficient support in the form of access to finance, improved technology and knowledge, small-scale miners have therefore had little choice but to look elsewhere, pushing them further towards informal sources of finance, and deeper into the informal economy.

⁶⁰ A trommel is a cylindrical drum, set at an angle that rotates in order to process material by separating the larger rocks and boulders and allowing the smaller material that contains the gold to captured and then run through a sluice box.

⁶¹ Interview, 18th February 2015, licensed small-scale miner.

4.2.3.4 Perpetuating inaccurate and damaging stereotypes – the *galamsey* ‘menace’

This leads to the final point, which is how a poor understanding of the sector’s livelihoods dimension at the national level has led to the perpetuation of inaccurate and highly damaging stereotypes that have acted to further entrench informality. Specifically, the malicious rhetoric emanating from high-level government officials and national media which regularly describe the sector as a ‘menace’, ‘full of criminals’, and in need of ‘sanitising’ (Mutmeri et al, 2016; Hilson 2017). An anecdote from one miner helped exemplify just how disconnected high-level (national) government officials based in Ghana’s towns and cities are with the realities on the ground:

I met...I met one I won’t...I won’t even mention the name but a very high-level person in government; a deputy minister in a hotel in Kumasi. In fact, they were talking about this sustainability. And he said ‘as for me if I went there, all the *galamsey* people will be shot’. And I stood and said, looked at him and they were..... And said look ‘oh honourable... No!!...people who don’t understand the dynamics of small scale mining sit outside and talk a lot of things. If you come in you will see.⁶²

Again, rather than seeking to understand and address the livelihoods dimension and underlying causes of informality, which are, as outlined, a result of a constraining opportunity structure that makes access to mineralised land and licensing a challenging endeavour, national level actors responsible for managing the ASM sector in Ghana are instead moving in almost completely the opposite direction. Rather than account for the livelihoods dimension and drivers of informality they are instead electing to focus on the ‘expressions’ of the sector’s informality. To highlight the enormity of the disconnect between national policymakers and reality, the latest moves also go against all of the recommendations made in the academic literature with regard to formalising the sector that was highlighted in Chapter 2. They are also in stark contrast to the renewed interest being paid by the World’s development agencies that, as outlined at the start of this chapter, are keen to harness the sector’s development potential (AU, 2009; IGF, 2017; Hilson, 2017a; Fritz et al., 2018).

In Ghana, two of these recent ‘policy initiatives’ stand out (Table 4.5). They demonstrate how current rhetoric from the government combined with its lack of recognition of the sector’s livelihoods dimension is acting to further entrench operators in the shadow economy. The first is the *Inter-Ministerial Task Force on Illegal Mining*, a panel comprised of representatives from local government agencies and national security personnel. The announcement and resulting actions taken were fresh on the minds of interviewees, many of whom reflected on the decision and its impacts. Initiated in 2013 under the Presidency of John Mahama of the National Democratic Congress party, the taskforce coordinated military sweeps of ASM sites, during which equipment was seized and operators believed to be engaged in illegal activities were arrested, with a particular emphasis on removing largely Chinese foreigners. During the initial phase of sweeps in July 2013, it was reported by the media that 40 vehicles, 85 pieces of

⁶² Interview, 16th September 2015, licensed small-scale miner.

earth moving equipment and 49 weapons had been seized, 1,568 foreigners arrested and a total of 3,877 deported, a number of whom voluntarily submitted themselves for removal from the country (Odour, 2013). A Municipal Chief Executive reflected on the events that had unfolded at the time:

You should remember in 2013 you know these *galamsey* people, no this Chinese *galamsey* it was like they took over the nation, so like national security. The president mandated the national security to do some operation called operation 'Hot *Galamsey*' so the national security moved to all the minerals areas that were being affected by the *galamsey*. They were able to direct, that is that they seized the excavators they bundled all the people to Accra the foreigners were sent back to their hometown. Because you know small-scale mining is not supposed to be undertaken by FO-REIG-NERS. Small-scale mining is only for the indigenous. Whilst the large-scale mining is for the foreigners.⁶³

The second example of how the government's lack of recognition of the livelihoods dimension combined with its anti-*galamsey* rhetoric is acting to informalise the sector further, is the continued deployment of heavy handed, military intervention. Despite a change in the governing party,⁶⁴ military sweeps remain the most popular method for dealing with *galamsey*. As Hilson (2017b) explains, shortly after Nana Akufo-Addo's New Patriotic Party was elected into office in December 2016, the Accra-based radio station, CitiFM, spearheaded a '#StopGalamseyNow' campaign, utilising Twitter and calling on government to take immediate action to 'clamp down on the menace which is destroying the county's land and water resources' (Adogla-Bessa, 2017). The campaign was successful in galvanising the Ghanaian population, and in late March 2017 Ghana's Minister of Lands and Natural Resources, Mr Peter Amewu, implemented a six-month ban on all ASM activities, including licensed operations, in order to 'sanitize' the sector. He also placed a suspension on the issuing of new mining licences for an entire year. The most recent development has been an all-out 'war on *galamsey*', in August 2017: *Operation Vanguard*, an intervention under which 400 security personnel were recruited and tasked with removing all unlicensed miners in Ghana. Hundreds of arrests have been made and over 2,000 *Chang-fa* machines and pieces of earth moving equipment destroyed. Like other military sweeps, however, *Operation Vanguard* has left a trail of destruction: in addition to reports of human rights abuses, there have been accounts of shootings and killings of *galamsey* operators. The rhetoric of government and the approach currently being taken in Ghana to 'formalise' ASM is therefore not only promulgating further violence, conflict and human rights abuses, but is also wholly inconsistent with the international and regional debates on ASM in sub-Saharan Africa, as well as the vast literature that has developed over the last four decades. It has also meant that in not recognising the significant social and economic contribution to the country's export earnings in tandem with the livelihoods dimension of the sector, the government has likely missed out in capturing value through millions of dollars in lost tax revenues while ASM activities have been suspended due to the ban.⁶⁵

⁶³ Interview, 15th September 2015, local government official.

⁶⁴ Having been in opposition from 2008 to 2016, Nana Akufo-Addo's New Patriotic Party was elected into office in December 2016.

⁶⁵ GNASSM recently estimated that the small-scale mining industry had lost some USD 551 million since the ban (JoyOnline, 2018).

Overall, the analyses and discussion in this sub-section (4.2.3) of the chapter has shown how by not recognising the poverty-driven nature and the livelihoods dimension of the sector, governments and policymakers have instead fuelled informal ASM activities. To summarise: as a result of this lack of recognition, the approach taken to managing the sector has focused on the expressions of informality rather than the underlying causes, and resulted in the development and implementation of largely ineffective technical programmes designed with the ‘entrepreneur’ in mind. Similarly, it is argued, in the absence of a coherent understanding and recognition of the livelihoods dimension of the small-scale mining sector at the international level, combined with a pre-existing policy framework that advocates the extraction of resource rents from foreign multinational mining companies as the primary means for African countries to generate value from their mineral sectors, national governments have been left with little support, incentive, or guidance on how to develop their indigenous ASM sectors. This has led to a degree of policy ‘flip-flopping’ and an approach to ‘formalisation’ that has been based on experiences for large-scale mining, namely, scaling down large-scale mining legislation and policy to ‘fit’ ASM activities, and subsequently extracting resource rents from the sector. The result is that instead of developing bottom-up support initiatives which are so desperately needed by impoverished operators, the government has further entrenched the sector’s informality as miners have had to look elsewhere to semi-formal, non-state actors for support. Combined, these issues have been further exacerbated by an anti-*galamsey* rhetoric, which, again it is argued, is in large part a failure to recognise the great importance of the sector to rural livelihoods.

4.2.4 Summary

By mapping the key international and national mineral governance frameworks, institutions and stakeholders through the lens of the adapted GPN framework, the discussion and analyses so far in Chapter 4 has highlighted three significant ways in which the overarching opportunity structure and policy initiatives put in place for ASM have acted to further informalise activities. The interlinked issues of unavailability of mineralised land, an inaccessible licensing process, and a lack of recognition of the livelihoods dimension that underpins the sector have been driven by a large-scale mining bias in policy and practice. In turn, this bias has promoted foreign direct investment at the expense of developing the indigenous ASM sector; erroneously cast small-scale operators in an entrepreneurial light which has resulted in the design of a licensing process that is inaccessible to disempowered miners; and validated the extraction of resource rents as the primary means of harnessing the sector for development. Compounded by a significant disconnect between national policymakers and local level officials working alongside ASM communities, together, these interrelated macro-level issues in the political economy help explain why formalisation of the sector has proved to be so elusive in the region, and Ghana more specifically (Objective 1).

In order for Ghana’s policymakers to undertake what is essentially a 180 degree turn in its current policy direction, and work towards ‘foster[ing] the establishment of resilient artisanal and small-scale mining

(ASM) communities' under the Africa Mining Vision (Table 4.1), to which it is a committed signatory, and, align with the 'nine steps' to formalisation that are outlined in the World Bank publication, *Mining Together: Large-Scale Mining meets Artisanal Mining* (World Bank, 2009, p. 22), and were examined in Chapter 2, a significant re-orientation is required. For this to happen, a greater understanding and detail of the sector's local level dynamics of production is needed. Information of which can help to inform *evidence based* policymaking and bottom-up formalisation initiatives that can aid a transition of miners to the legal sphere, while simultaneously providing accessible support services to mitigate the negative impacts of activities and expressions of informality that have been the main focus of misguided and muddled efforts to date.

4.3 Ethical mineral certification: a vehicle for facilitating formalisation of ASM in sub-Saharan Africa?⁶⁶

The Government of Ghana and policymakers in the region, however, are not the only ones in need of a more detailed understanding of the functioning of local ASM production networks. A critical analysis of the certification related activities being undertaken in Ghana (Objective 1) in relation to the overarching mineral governance frameworks examined thus far, helps to understand and reflect on the extent to which they are able to connect with informal miners identified as being in most need of support. For ethical mineral schemes to truly deliver on their objectives to empower operators and support the wider formalisation of the sector, designers and implementation bodies must connect with the informal 'spaces' and address the barriers to formalisation in the wider opportunity structure in countries such as Ghana where these individuals are embedded. Yet, despite such claims as 'creat[ing] opportunities for producers and workers who have been economically disadvantaged or marginalised by the conventional trading system' (Fairtrade, 2015), and 'contribut[ing] to a generation of decent work, local development, poverty reduction, wealth creation and social peace in our nations driven by a growing consumer demand for sustainable minerals, ethical jewellery and responsibly sourced gold in general' (ARM, 2014, p. 4) evidence from the fieldwork suggests that officials from Solidaridad, the NGO tasked with identifying and working with small-scale mining cooperatives to reach the minimum standards required for certification, have shown very little interest in mapping the labour strata of ASM communities, identifying the marginalised and informal operators, and working with host governments to license and ultimately certify them. An emphasis on 'formalisation' – that in order to be eligible for certification from an organisation such as FLO or ARM, a cooperative or individual must be in possession of a licence – has led to the bulk of Solidaridad's efforts in countries such as Ghana targeting small groups of miners who are *already* in possession of licence.

Formally beginning its work in artisanal and small-scale gold mining in sub-Saharan Africa in 2012 (Solidaridad, 2018), within Ghana, Solidaridad has been working with five *licensed* small-scale gold mines

⁶⁶ Parts of the thesis here have been used to as part of the publication: Hilson, G. and McQuilken, J. (2017) 'Moving overseas? Critical reflections on the implementation of Latin American ethical gold schemes in sub-Saharan Africa', in Deonandan, K., and Dougherty, M.L. (eds.), Chapter 10, *Mining in Latin America, Critical approaches to the new extraction*, London: EarthScan from Routledge.

located in the country's Western Region, (Table 3.4 – Chapter 3), three of which in the locality of Tarkwa were regularly visited as part of the PhD fieldwork. The main aim of Solidaridad's work has been to support these mines to improve the social and environmental credentials of their operations and meet minimum standards of production in order to ultimately become eligible for certification under either ARM's or FLO's Fairmined Gold or Fairtrade Gold initiatives.

Yet, while it has been stated on the Solidaridad website that 'We support miners in gaining legal status under national laws', as well as 'We help facilitate programmes on land rights, environmental risk assessments, wage laws, input supplies, and labour rights that support miners in becoming part of the legal economy' (Solidaridad, 2015) the three mines the NGO is working with in the locality of Tarkwa were already in possession of a licence prior to the organisation's arrival and therefore a part of 'the legal economy'. The insights gained and extracts presented over the course of this final section in Chapter 4, which are taken from interviews with key ASM stakeholders as well as small-scale miners who have been engaged with Solidaridad, therefore appear to very much support arguments from the literature examined in Chapter 2. These are that the ethical mineral certification initiatives currently operating in the ASM space appear to be largely engaging with already licenced and formalised 'elite' operators – the so called low hanging fruit (Tables 2.6 and 3.4). One Solidaridad official at the time, and who had previously worked at the Minerals Commission, reflected on why this was the case:

Yea, but I think it is a bit tricky, because you know even when I was with the Minerals Commission that was a problem that we were facing, if you go closer to the illegal ones they will say you are condoning and conniving on them. Sometimes on the thing you take money from them, so sometimes it is a bit tricky if you are going close to the illegal ones. And so, one, I think we had in mind of that sort of you know stigmatisation if you are not careful that will be attached to the image of our organisation. But then we want to go gradually so that's why we are trying to work with the mid-scale mines, try do some kinds if there are informal or illegal ones, we negotiate with them if we can share the part of the concession where they are working so that we support them to formalise or to regularise their operations.

The official also elaborated on the criteria used to select small-scale miners as well as plans to engage with 'mid-scale' miners:

In fact, some work was done before I came, but I know that, I am aware that they were looking at the legal, legal registered companies, and also because they are having a lifespan, the project duration was three years, they were looking at ones that have a reserve of more than the project duration ... We were looking at small-scale but there's a project we are rolling out. That one we are keen to work with mid-scale miners that have you know artisanal and small-scale miners in their catchment so that we establish some kind of informal cooperation between them and see how they can support each other.

Communications with local government officials in Tarkwa reaffirmed that this was the preferred approach - that the organisation arrived in Ghana in 2009, and, with the support of policymakers, worked toward forging partnerships with *established* operators. Selection was based on the following: that sites were already licensed and that managers had a good working relationship with local government; that operations produced large quantities of gold and were active all year-round; and that the organisations being partnered with have permanent members of staff as opposed to seasonal workers or mobile labour forces.⁶⁷ The official also elaborated that some of the miners were later taken abroad to a Fairtrade meeting in East Africa and that the incentive of a possible trip was used to help ensure their participation with Solidaridad.

It seems, therefore, that at present there is little interest in engaging with the root causes of informality or working with informal operators, the majority who make up more than 70 per cent of small-scale miners in Ghana, to help bring them into the legal domain. Significantly, this targeting of 'low hanging fruit' reaffirms the concerns raised in Chapter 2 (Section 2.2.2) and appears to be intentional: there is no evidence to suggest that the organisation intends to build on the foundation laid with these elite producers and target more needy operators. Moreover, the decision to partner with the chosen five pilot sites (Table 3.4) is unlikely to produce many transferable lessons. Perhaps in targeting the 'low hanging fruit', the organisation was simply looking to get programmes off of the ground, establish a foundation, and then look to circumnavigate and meander through the institutional complexities of the informal gold mining economy to reach those in desperate need of assistance. However, even this seems unlikely given the type of activities and programmes that were undertaken with the five mining cooperatives in Ghana (Table 3.4). An interview with a Solidaridad official characterised their interventions and demonstrates how their activities were focused on training in health and safety, the safe handling of mercury, and improving working conditions:

Because our intervention is mainly on training and then also support in the form of personal protective equipment. But before the personal protective equipment you give them training and then also sensitising on the, I mean the advantages of using them. So, it was a bit difficult you know trying to get them so I realised that and quickly thought that it would be good we [do] a project with what they were, you know, more interested in, you see, so that as we worked along we brought in things that were also interesting to them. And to the extent that, when you talk of labour, in fact we are in our ten[th] year but we started the labour training not quite long because trainings that have to do with labour are very sensitive to them, and they are not most of time interested. So, we started with the first aid trainings, you know, and then started also giving them some supplies because as part of our intervention we support them with the personal protective equipment so we started with that. And then along the line we chipped in other trainings like

⁶⁷ Interview, 1st June 2015, local government official.

handling the use of mercury which was done by artisanal gold council. In fact, we contracted them to come around to.⁶⁸

Discussions at each site reinforce points highlighted in the above passage, and while the activities undertaken had certainly led to visible improvements, such as some miners seen to be wearing personal protective equipment, the reality was that each cooperative was a very long way from being anywhere close to meeting the minimum standards necessary to become certified. Furthermore, all but the Dakete Mine reported that they were no longer in regular communication with Solidaridad, and had not undertaken any meaningful engagement with them for almost a year. The limited lasting impact of their interventions is shown by discussions with the various appointed representatives at the sites that were visited. For example, the Solidaridad representative at one site who is tasked with overseeing the certification related activities and being the main point of contact with the NGO, remarked that 'so far [he hadn't] heard from them ... since the beginning of this year ... or what's happening with the contract'.³⁵ The representative also explained why he thought the Dakete mine was having the most success with their efforts towards certification:

I don't know whether they've selected some of us. Whether it is Dakete. But I think it is Dakete. He is achieving the certification. Because they have done a lot. You see because theirs is like you know erm I don't know how to say it ... they are all under one umbrella. You know and they are always paid every month. But for ours we don't. Our boss don't pay us every month. It's what you get. Ermm the ore, the stone. Yeah that is what you know, you will take home. You understand eh? Yeah, so I think Dakete is getting closer to the certification.⁶⁹

This point made by the interviewee is significant. The organisational set up at the Dakete mine is unique when compared to the other small-scale mines visited as part of the fieldwork, and the labour dynamics that are mapped in Chapter 5. While at the Dakete mine labourers are regular employees of the company, paid a regular monthly salary and provided with personal protective equipment, the majority, if not all, of the other ASM operations pay their workforce in portions of sand or ore which is mined over three-week cycles off production. The implications of these payment dynamics are returned to in Chapters 5 and 6. Furthermore, the majority of labourers at these sites were found to be highly mobile and itinerant. Thus, it is due to Dakete's unique organisational set-up, rarely found elsewhere, that the mine has had greater success with moving towards the criteria required for certification under the support of Solidaridad.

This finding also further supports arguments from Chapter 2 (Section 2.2.2) that certification initiatives appear to be primarily targeting and forming partnerships with elite, licensed operators and long-established mining small-scale mining companies. Indeed, one of the senior employees who is in charge of the underground operations at Dakete revealed in an interview that he was formerly employed at the

⁶⁸ Interview, 21st August 2014, Solidaridad official

⁶⁹ Interview, 12th June 2016, small-scale miner at a mine working with Solidaridad.

large-scale gold mine Gold Fields Ltd. located to the north of the town (Chapter 5) before he joined the company in 1999:

Underground network, operations ... my ... erm ... original this thing, ahh ok! I do err drilling and the blasting. With erm the big mines that you see ... ok I started from State Gold Corporation which is ... err... yeah ... before Gold Fields. So, I left Gold Fields in 1999 when I came and joined this company.⁷⁰

Given this solid foundation with which to work with, it is not surprising that following the training received from Solidaridad, the Dakete mine was awarded 'Small-Scale Mining Company of the Year' as part of Ghana's 2015 Western Regional Business Excellence Awards in recognition of outstanding businesses that have contributed significantly towards regional development (Solidaridad, 2016). The transferable lessons from working with Dakete are therefore likely to be limited, and, much like the failure to adequately understand and account for the role of middlemen in Fairtrade Gold's East Africa pilot (Chapter 2, Section 2.2.2 - Kessler et al., 2015), a poor understanding of the local level functioning of ASM activities at other mine sites will likely hamper Solidaridad in their efforts to reach larger groups of both licensed and informal miners and help them work towards certification.

Furthermore, the efficacy and sustainability of Solidaridad's work in Ghana with small-scale mining organisations was also called into question through discussions on the ground. This is evidenced not only by the lack of progress made towards certification since first engaging the cooperatives over six years ago, given that despite visions of the organisations reaching certification in 2015/2016 (Table 3.4 – Chapter 3) none of them have reached certification at the time of writing (January 2018), but also from the mixed reports from the Solidaridad representatives at the sites visited. One small-scale miner enthusiastically explained a number of very positive benefits of working with Solidaridad:

They wanted us to, they wanted to raise the standard of *galamsey* here. Especially sometimes when you come to our sites erm the environment is clean. The water is also protected. You know erm we have toilet facilities, we have because *galamsey* it is hard for you to get an office, but they were able to. Even, I even forgot this, they helped... they were able to help us to build an office. They gave us office equipment. Computers, they gave us ehh printers, in fact very beautiful office! Yeah, we use the office and I take records of all the workers. Which, beginning, initially that thing has never being done. But with the coming of Solidaridad they took us through all these things. We have the records of our workers, if you are injured, we have your records. When you come in early, we have records. When you go home, we have the records. So, I have everything there on the PC.⁷¹

⁷⁰ Interview, 23rd July 2015, small-scale miner at Dakete mine.

⁷¹ Interview, 12th June 2016, small-scale miner at a mine working with Solidaridad.

While at Dakete, the mine singled out has having made the most progress towards certification due to its permanent salaried workforce, further praises were made of the improvements the organisation had engendered through their programme:

The difference before Solidaridad, because though they came here before we came they didn't start doing much work before we came and you know the workers attitude was different, their response to safety was that bad but when they came in with the education we received from them people are now aware of how to protect themselves how to go about their works and then to create the awareness that after all the small-scale mining company is not there in order to deprive people from their freedom or whatever, it is there rather to serve as a means of producing people who can feed their families so with this being a, a move from the orthodox believe [a distant bang is heard from mine blasting] Don't fear, we are not in Afghanistan this is Ghana! [laughter]... And Solidaridad people they also assisted us to do a crèche. You know like for the children. That was child labour. The women that carry the ore, some of them had their babies on their back. Some too their babies will be loitering around which is not a fair practice so they have put up the crèche and the when the women come they deposit their children there after doing some work they will pick them up.⁷²

In the context of the very limited support that has materialised for the sector over the years, these positive impacts as a result of Solidaridad's interventions with its partner small-scale mining companies should certainly be celebrated, and indeed recognised as part of a balanced analysis. However, the longer-term and wider impacts of interventions such as these remains to be seen. First, with regard to the highly mobile labour force, which again, is a feature of ASM operations across the sub-Saharan African region, and meant that, as one interviewee explained, many of the labourers who underwent initial training with Solidaridad at one of the partners mines had since left the site:

Sometimes or other, people will discover another stone, rock somewhere, you have to go and all. And leave your site. So that's the difficulty sometimes we have. They even gave us this PP, Personal protective gears. You know helmet when you are going underground. Put on helmet. Your wellington boots and then your safety boots.⁷³

The second example of the relatively limited impacts of Solidaridad's interventions with small-scale miners, and one that also demonstrates the importance of fully understanding the functioning and detail of activities, relates to the inappropriate protective equipment that was handed out to miners at some of the partner sites. A senior miner at one of the partner mines explained that the protective boots that they were given by Solidaridad were of no use for the site-specific geology and set-up of mining activities at that particular location. Using boots makes it even more dangerous for miners to climb down the 10 m (or more) vertical mine shaft, as it is not possible for them to properly grip or fit the foot between the

⁷² Interview, 29th May 2015, small-scale miner at a mine working with Solidaridad.

⁷³ Interview, 12th June 2016, small-scale miner at a mine working with Solidaridad.

horizontal wooden posts that support the shaft walls and act as a ladder. Instead miners at these types of hard-rock underground mines in the area prefer to use open-toed plastic 'jelly sandals' colloquially referred to as *kayas* in reference to the manufacturers name on them. Furthermore, as the extract below from this interview clearly illustrates, the helmets provided by Solidaridad were also of little use because they made it a challenge to attach the low-cost hand-held battery powered torches that are readily available in the local market. These are usually strapped round the side of the miner's head with a repurposed thick band of rubber in order to see clearly when working down the mine:

I take in-charge of all of those things so any worker that comes for a helmet or an ear plugs I take records of it. Yeah so that is what we do. Erm in-fact initially we don't take them back but then it got to a time they've, they, you know because they haven't been wearing them, it felt uncomfortable [laughter]. You know, yeah so, it got to a point they were not wearing them. You see and then even if they wear, they will come to the site they will not take them down into the pit. Oh yeah, they just don't use it there. You know because of the... You know the helmet we have one with the torch. But those that they [Solidaridad] brought they don't have the torch here [on the side]. So, they, it was having like, they were having some difficulties wearing the helmet with the torch around their head. So, they don't feel comfortable you know when using the helmet so you sometimes they leave it down. Some of them also take them down ... those who are discipline, they take the helmet down, and then they work with it.⁷⁴

Knowledge of these specific dynamics could have easily been obtained through even the most basic of mine site visits and by talking directly with operators to understand their needs. A more detailed and thorough understanding of the labour dynamics and production networks at sites before intervening would therefore help immeasurably to improve the impact and sustainability of certification interventions, and ultimately, the livelihoods of miners themselves. In summary, despite claims which may suggest otherwise, the *Fairtrade Gold* and *Fairmined Gold* exercises have yet to have transformative effects on the livelihoods of Africa's poor. Few small-scale gold miners in Ghana, and sub-Saharan Africa for that matter, satisfy the entry criteria of any of the fair trade or allied certification schemes. As outlined, the vast majority of ASM operators in sub-Saharan Africa work in informal 'spaces', where they are far removed from the crucial support services capable of bolstering their production and increasing their earnings. For ethical mineral schemes to truly deliver on their objectives and to empower the ASM operators in the greatest need of assistance, designers and implementation bodies must connect with the informal 'spaces' where these individuals are found. They must commit to understanding the nuances of these complex 'spaces' with a view toward gathering the information needed to establish a platform for formalisation and ultimately, to launch effective pro-poor ethical mineral certification schemes.

⁷⁴ Interview, 12th June 2016, small-scale miner at a mine working with Solidaridad.

4.4 Conclusion

Without a detailed understanding of the local level dynamics of small-scale mining operations, the policy frameworks and interventions enacted over the past four decades in sub-Saharan Africa as well as in Ghana have *created* the sector's informality. By mapping the overarching mineral governance framework and national level stakeholders through the adapted GPN framework, this chapter has identified three key interlinked ways the policy environment has continued to enhance the conditions that confine over 70 per cent of miners to the shadow economy and embed them in cycles of poverty. The large-scale mining bias found in policy throughout sub-Saharan Africa, as well as in Ghana, has cultivated decades of erroneous 'thinking' that the small-scale miner, like their bigger sibling, is an entrepreneur. It has also meant that the few support efforts that have been put in place, have focused on licensed operators, and scaling down large-scale regulations and policy to manage and extract value from ASM activities through resource rents. This approach has also led to the neglect of impoverished small-scale miners by encouraging and empowering foreign investors at the expense of further marginalising ASM operators, the development of inappropriate and inaccessible licensing procedures, and side-lining the recognition of the livelihoods dimension in policymaking. Made worse by the disconnect between national level and local government officials, together, these interrelated macro-level issues in the political economy explain why formalisation of the sector has proved to be so elusive (Objective 1).

The next chapter of this thesis further mobilises the adapted GPN framework in order to map and understand the local dynamics of the sector's informality. It is imperative that the organisations managing and implementing ethical mineral schemes, as well as governments and policymakers purportedly seeking to formalise activities, capture the fine details of the populations they are targeting and use this information to modify standards and develop inclusive bottom-up, pro-poor formalisation strategies accordingly.

Chapter 5 – Mapping informal artisanal and small-scale mineral production networks

5.1 Introduction

At the local level, ASM activities are an inherently socially networked phenomenon. A detailed mapping of the sector is an essential starting point for policymaking bodies and ethical mineral certification organisations that are interested in formalising and supporting the sector, but which do not have the requisite data needed to make informed decisions that are better connected to the realities on the ground. Retrieving this information about informal small-scale gold and alluvial diamond mining in Ghana, and the wider sub-Saharan region, is especially important in light of the concerns raised in Chapter 4. The chapter highlighted, *inter alia*, how initiatives taken to support and regulate the sector have rather *created* informality and further embedded ASM communities in the shadow economy. In addition to helping to inform the design of certification initiatives that are better able to connect with the informal space, greater detail of the functioning of local level ASM production networks would yield improved policy. Some examples outlined in Chapter 4 include commitments made in regional governance frameworks such as the AMV to ‘foster the establishment of resilient artisanal and small-scale mining (ASM) communities’ through formalisation’ (AU, 2009, p. 32); the need to strengthen the Kimberley Process Certification Scheme (KPCS),⁷⁵ which since its launch in 2003, has had limited impact in curbing the smuggling of rough diamonds between countries in West Africa and does little to address issues of poverty and exploitation (Table 2.4; Appendix 1); to move beyond ineffective technical interventions aimed predominantly at licensed small-scale mining ‘entrepreneurs’; and the escalation, specifically in Ghana, in recent years of heavy-handed tactics comprising military-style sweeps of illegal mine camps, destruction of equipment, and politically-motivated country-wide bans on all ASM activities. If formalisation of ASM is to be a centrepiece of the African development agenda moving forward, in addition to licensing schemes and support services needing to be more in tune with the capabilities and needs of informal operators, complementary initiatives such as ethical mineral certification schemes must be strengthened.

Building on the macro-level mapping of the overarching mineral governance framework presented in Chapter 4, this chapter focuses on the community, micro-level processes and functioning of ASM activities. These comprise the bottom three quadrants of the adapted GPN framework presented in Figure 2.3. The chapter maps and critically examines the roles of local-level stakeholders and detailed workings of mine site activities and organisation, and the local level networks of production through the three interrelated analytical categories of *embeddedness*, *empowerment (power and agency)*, and *value* (Chapter 2, Section 2.3) and is structured accordingly. It is this information, it is argued, that policymakers and certification bodies seeking to formalise and support the sector will need if they are to reach informal

⁷⁵ The Kimberley Process Certification Scheme (KPCS) is a joint government, civil society and industry initiative aimed at stemming the flow of rough diamonds used to finance wars. It was ‘officially’ launched in 2003 (see Table 2.4 and Appendix 1).

ASM spaces. The chapter draws on available data and production statistics provided by local government, found online, and contained in various reports to help contextualise the local networks of production. But the bulk of the findings presented in the discussion that follows are drawn from over 80 in-depth interviews with local-level stakeholders working across the ASM network as well as discussions with local government and mining company officials (Chapter 3, Section 3.3.2; Table 3.6). In undertaking this mapping exercise and critically reflecting on the findings, the chapter seeks to address Objective 2 of the thesis ('To improve understanding of the dynamics of local ASM production networks, operators, and their experiences within the poverty trap by applying the adapted GPN framework to map and analyse the social networks of artisanal and small-scale gold and diamond production in Ghana'). The chapter also helps to address, in part, Objective 3 by applying the adapted GPN framework and exploring its potential and methodological contribution for analysing and mapping local ASM production networks.

The following local-level mapping exercise illuminates the type of information that can solidify the bedrock for formalising and supporting ASM, and help to extend the reach of ethical mineral certification initiatives to the small-scale mining operators working in sub-Saharan Africa's informal economy.

5.2 Global diamond and gold supply chains in context

In order to fully understand and map the dynamics of ASM activities it is first necessary to share details of the global mineral supply chains that the local-level networks help to feed (Chapter 2, Section 2.2.1). In line with the research strategy outlined in Chapter 3 (Section 3.3.2), this section of the chapter therefore introduces how the two local-level *embedded* case studies examined here, namely the gold mining town of Tarkwa in Ghana's Western Region, and second, the impoverished diamond-producing town of Akwatia in the country's Eastern Region, are inextricably linked to the world's economic system. Due to the marked differences in the global structure and final destinations of Ghana's gold and alluvial diamonds, the case studies are introduced separately. The remainder of the analysis in this chapter, however, weaves together the two case studies in order to synthesise and distil the key findings. These are then further explored in Chapter 6, which reflects on the mapping exercise presented in Chapters 4 and 5 in greater depth, and provides a set of clear recommendations for improving formalisation strategies and ethical certification initiatives in Ghana and more broadly, sub-Saharan Africa (Objective 4).

5.2.1 Akwatia diamonds ⁷⁶

When grafted on to the GPN for diamonds and the 'artisanal production strand'⁷⁷ for West Africa, the town of Akwatia occupies a small segment. While precise data are unavailable, based on levels of declared production alone, it can be surmised that there are hundreds of thousands of artisanal diamond miners scattered across West Africa in countries such as Liberia, Sierra Leone, Côte d'Ivoire and Guinea. Ghana

⁷⁶ The sections of this chapter on Akwatia have informed the basis of: McQuilken, J. and Hilson, G. (2018) 'Mapping' Small-Scale Mineral Production Networks: The Case of Alluvial Diamonds in Ghana.' *Development and Change*. *Forthcoming*.

⁷⁷ Those mining at the artisanal level are working alluvial deposits. Most large-scale diamond mine operators work kimberlite deposits but some also harvest stones that occur alluvially. Here, the 'artisanal production strand' is defined as the actors and organizational structures comprising the segment of the chain mining alluvial diamonds on an artisanal scale.

has, by comparison, only a fraction of the number of diggers when compared to those found in these countries, all of whom are based in and around Akwatia, where almost all the country's proven diamond reserves are found: according to the most recent statistics, there are 6,420 diamond workers registered in the government's Mining Registration Database (Chirico et al., 2010). This figure could be even lower today, given Ghana's fast-depleting reserves of accessible alluvial stones, and the growing popularity of small-scale gold mining as an alternative livelihood (Hilson, 2010a; Hilson and Garforth, 2013). Most of Ghana's diamond miners are small-scale tributers: individuals who have been permitted to mine on land that has been sold or leased to them by Great Consolidated Diamonds Ghana Ltd. (GCDL), or its predecessor Ghana Consolidated Diamonds (GCD), the company which owns the Akwatia mining concession that encompasses the entire town and its residents.

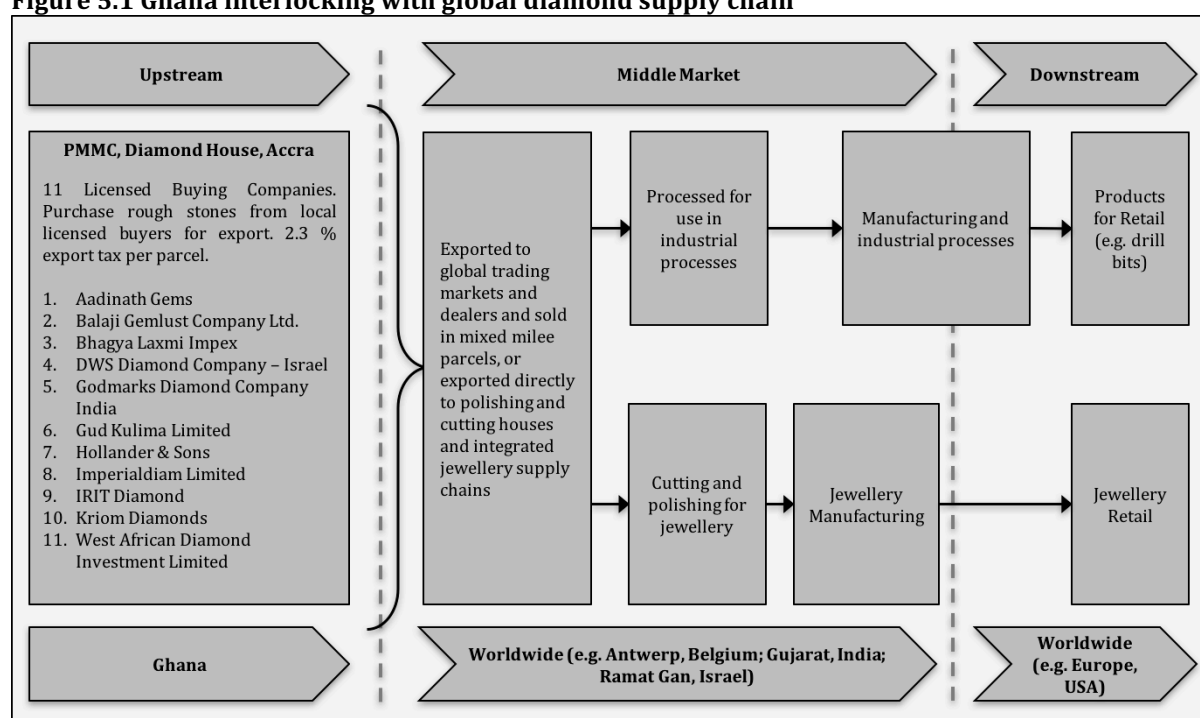
Despite Akwatia's small, and diminishing, level of diamond production, analysis of its organisational structures still yields valuable insight into the complexities and intricacies of, and relationships between, the millions of actors who today populate the world's alluvial diamond sector, which produces 10 to 15 per cent of the world's rough stones. Alluvial diamonds, most of which originate from sub-Saharan Africa, flow to points of export in local supply chains. At various points within the distribution, cutting and polishing sections of the GPN for diamonds, these supply chains fuse with those linked to the 'large-scale production strand', which is tied to operations working the kimberlite pipes of Southern Africa. A brief overview of the upstream sections of the GPN for diamonds, along with the industry's key historical developments, helps to put the case of Akwatia into context.

The alluvial diamonds being mined in Ghana and elsewhere in sub-Saharan Africa are part of a unique GPN long manipulated and controlled by the corporate giant De Beers. As detailed in a series of informative reports (such as Hirway, 2009; Bain and Company, 2011), from its upstream position, the company, through a complex network of subsidiaries, has skilfully used the distribution and marketing channels for rough stones to control downstream activities in the diamond value chain. De Beers no longer has the absolute monopolistic control of the diamond trade it once had. But its stranglehold over the marketing and supply of rough stones has shaped, and continues to influence, both directly and indirectly, the foundation for global diamond production, an intricate network of nodes and linkages into which a burgeoning group of alluvial miners scattered across sub-Saharan Africa has now inserted itself.

On the back of what is widely regarded as one of the most successful advertising campaigns in history, De Beers' astute marketing in the late 1950s fuelled an unprecedented increase in demand for small high-quality diamonds, which European cutters and polishers at the time could not satisfy. This triggered, in the 1970s, a sharp rise in the number of diamond workshops in India, where production costs were considerably lower. India has since become the world's most important diamond cutting and polishing centre due to its continued low production costs (approximately 10 per cent of those in the United States, for example); its workforce has expertise in numerous specialisations and skills, capable of working all 7,000 types of the world's diamonds; and very importantly, given that most diamonds lose 50 to 60 per cent of their weight because material is removed from the rough product, it has a number of cutters and

polishers who have considerable experience in handling small, low-value stones (Engleshoven, 1999; Purani and Mehta, 2000; Hirway, 2009; Bain and Company, 2011). While Antwerp, which has more than five centuries of history as a centre for cutting, polishing and trading, continues to be the world's major diamond hub, through which 80 per cent of global rough volume is traded and subsequently sorted and dispatched to cutters and polishers around the world, during the past 50 years, India has cemented its place and now occupies an indispensable position in the GPN cultivated by De Beers. Substantial quantities of alluvial stones find their way to scores of diamond workshops in India, mostly in the state of Gujarat (and mainly the town of Surat), because of its proximity to the 30 to 40 sightholders⁷⁸ based in Mumbai and in localities such as Ahmedabad, Baroda, Visnagar, Mehsana, Sidhpur, Palanpur and Saurashtra (Purani and Mehta, 2000).

Figure 5.1 Ghana interlocking with global diamond supply chain



Sources: PMMC (2016); Bain and Company (2011; 2014)

5.2.2 Tarkwa gold

In contrast to Ghana's relatively minimal, albeit notable, role as an exporter of rough and typically low-value diamonds, the country is a key player in global gold supply.⁷⁹ Consistently ranking in or near the top ten of the world's largest gold producers, Ghana produced approximately 95.6 tonnes of gold in 2016,⁸⁰ accounting for USD 5.15 billion in export revenue. This placed it 11th globally and makes it Africa's second

⁷⁸ Companies authorised as bulk purchasers of rough diamonds; they are part of a list controlled by the De Beers Group.

⁷⁹ Each year global mining activities account for approximately 75 per cent of the world's gold supply, while the remaining 25 per cent is made up through recycling (90 per cent from jewellery and 10 per cent from electronics) (World Gold Council, 2018a).

⁸⁰ Some discrepancies in data exist and thus exact figures should be viewed with some caution: 95.6 tonnes is the figure quoted on the World Gold Council's website (World Gold Council, 2018a) where data is drawn from an inaccessible Metals Focus report (Metals Focus, 2018); the Ghana Chamber of Mines report that 'production and purchases of gold' by PMMC in 2016 were 4.1 million ounces, which equates to 127 tonnes; and production figures quoted on the Ghana Extractive Industries Transparency Initiative's website do not extend beyond 2013.

largest gold producer after South Africa (ICMM, 2015; Ghana Chamber of Mines, 2016; World Gold Council, 2018a). In terms of how ASM interlocks with global markets, it is estimated that between 10 and 20 per cent of annual gold supply comes from the sector. In Ghana, however, *galamsey* operators and licensed small-scale miners together supply approximately 35 per cent of gold, which contributes to over 95 per cent of the country's total annual mineral revenues (Figure 5.2). As part of this, Tarkwa represents a key node. Between 2010 and 2015 the two large-scale mines in the town accounted for almost a third of annual national gold production, while the gold *known* to have been produced by licensed small-scale miners in Tarkwa was equivalent to approximately one third of PMMC's annual exports of the precious metal in 2012 (gold originating from ASM) (Table 5.4). In rural Ghana, as well as in Tarkwa, gold is traded, refined and smelted at the local level many times over by an array of actors, gradually being aggregated together at key nodes, before making its way to international buyers and licensed exporters in Accra.

In Accra, it may be refined further at private licensed gold buying and exporting companies. It is then smelted into *doré* bars⁸¹ at these locations or by the services on offer at PMMC (at a cost of USD 25 per kg) and is ready for export. Aside from large-scale mining companies, which have direct export licences and taxation arrangements as per their mineral rights, since November 2016 all consignments by private exporting companies must be made through the PMMC offices in Accra. This move made by the Ministry of Lands and Natural Resources to capture more value, and clamp down on corruption and undervalued shipments, followed a directive which withdrew the rights of private licensed buying companies to export gold directly. It therefore re-established PMMC's monopoly (1989–1999, see Table 4.3) as the sole national ASM gold buyer and now exporter, and thus swelled the amount of gold and value from the sector that it is able to capture. Prior to this Fold et al., (2013) report that there were four main Accra-based foreign licensed buyers who exported their gold directly. Between 2015–2016 the amount of gold captured by PMMC through exports increased from nine to 38 per cent as a share of national annual production, the latter of which accounted for over 1.5 million ounces of gold (Ghana Chamber of Mines, 2016; Table 5.4). After gold arrives at its offices, PMMC assays the *doré* and issues a certificate establishing its value and, relatedly, the tax to be paid (0.65 per cent value of gold); completes the Bank of Ghana and Ghana Revenue Authority (GRA) export documents; and seals and stores the consignment in metal boxes until it is delivered to the assigned airline for export (PMMC, n.d.; Fold et al., 2013; A.A Minerals, 2018). While the vast majority of gold is exported without any further refinement, there are three refineries in Accra (and the whole of Ghana) capable of reaching purities (fineness) over 99.9 per cent. These are: the Ghanaian owned *Asap Vasa Company Ltd.* which has a capacity of 100 kg per day and commenced operations prior to 2010; *Sahara Gold Refinery*, which was established by a board of Ghanaian directors in 2012 and has an installed daily capacity of 200 kg that became operational in 2015; and the Egyptian owned and operated *Gold Coast Refinery Ghana Ltd.* which was inaugurated in 2016. However, all three are heavily reliant on financing from their foreign buyers/owners, none of them are listed on the London Bullion Market Association's good delivery list (see below), and at the time of

⁸¹ *Doré* is semi-pure gold and silver alloy in cast bars. They are usually produced on site at large-scale mines and may weigh up to 25kg.

writing the extent to which the first two are still operational and refining any significant quantities of gold is not clear (Fold et al., 2013; Oxford Business Group, 2013; Asap Vasa, 2018; Sahara Gold Refinery, 2018). While the latter is operating at less than five per cent capacity due to challenges with sourcing gold from licensed ASM operations (Gold Coast Refinery, 2018).

Once exported, the majority of Ghana's gold, including that originating from ASM activities in Tarkwa, ends up in Switzerland, United Arab Emirates (UAE), India, and South Africa. The percentage share differs year-on-year depending on factors such as the output of large-scale mining companies, and demand from markets in the importing countries. For example, Gold Fields Ltd., a large-scale mining company headquartered in Johannesburg which has two major mines in Ghana, exports directly to its part-owned Rand Refinery in South Africa (Table 5.1). When its two mines in and around Tarkwa are producing at full capacity, its share of annual gold exports to South Africa can comprise over 90 per cent (OEC, 2018). Having reached the global market place, the *doré* is refined further in one of the relatively few refineries⁸² capable of smelting higher purities. Worldwide, there are currently only 68 of these specialised refineries included on the London Bullion Market Association's *Gold Current Good Delivery List* that are capable of producing exceptionally high-quality *Good Delivery Gold Bars*. The bars must meet stringent minimum standards of at least 99.5 per cent purity, are usually 12.5 kg (400 troy ounces), and are of specified dimensions as well as other criteria (LBMA, 2015; LBMA, 2018), thereby assuring that they are universally tradable. The global market is dominated by eight key players that are capable of refining close to 5,000 tonnes of gold per year and meeting all of the annual demand from industry worldwide (Table 5.1; Figure 5.2). However, while cornering the lion's share, these companies cannot source enough gold to run at full capacity year-round. Instead, the remainder of the world's gold is processed across the 68 LBMA-listed refineries as well as others that are located closer to consumer markets and in national jewellery and manufacturing hubs.

Table 5.1 Largest gold refineries in the world by annual capacity

Refinery	Location	Annual capacity (tonnes)
Valcambi	Balerna, Switzerland	1,400
Metalor	Neuchatel, Switzerland	650
Rand Refinery	Geriston, South Africa	600
Tanaka Kikinzoku Kogyo	Tokyo, Japan	540
PAMP	Ticino, Switzerland	450
Hareus	Hanau, Germany	450
Argor Hareus	Mendrisio, Switzerland	400
Perth Mint	Perth, Australia	300
		Total 4,790

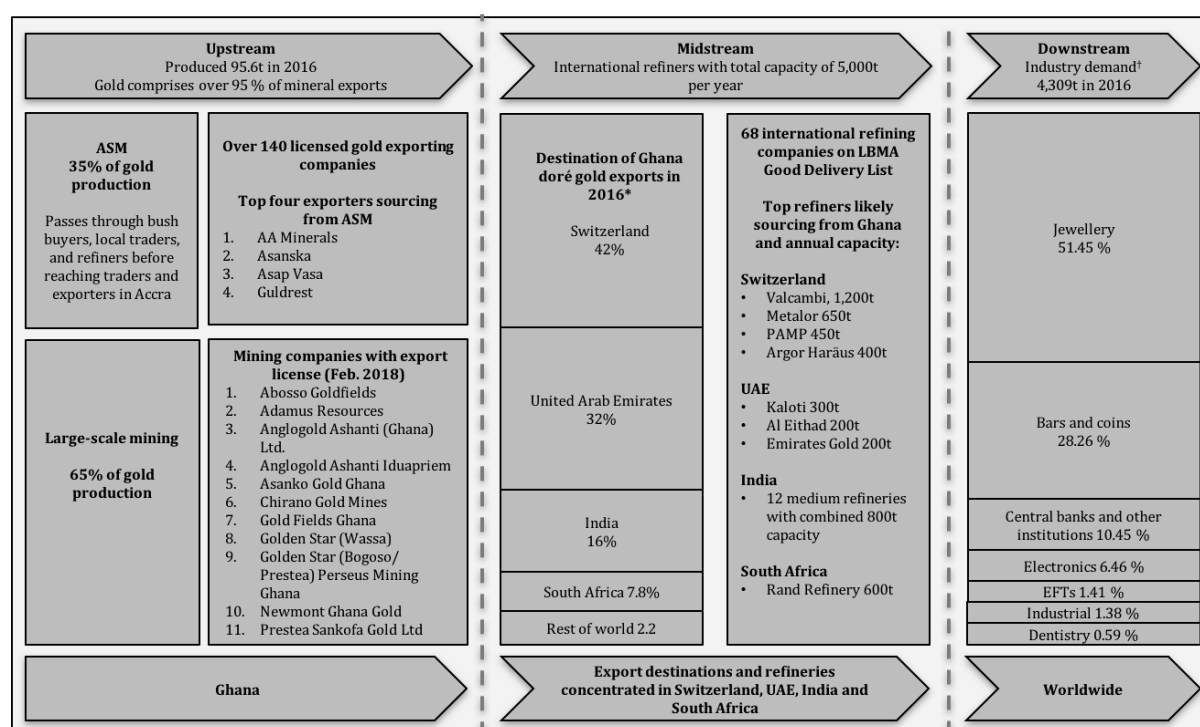
Source: The Real Asset Co. (2013).

Each year, over half of the world's refined gold it is made into jewellery (Figure 5.2). A large proportion of this subsequently ends up in private holdings in India and China because in these countries, 24 carat coins, bars, and jewellery are used to bank family wealth and seen as a sound investment (BullionStar, 2018a; 2018b). The next largest share of globally refined gold is used by the investment and banking

⁸² It is estimated here that there is likely no more than 100 refineries worldwide capable of producing bars of over 99.5 per cent purity. This estimate is based on: 1) the LBMA listing of 68 companies; 2) India, one of the world's largest gold markets having 12 medium sized refineries, and; 3) the expertise and capital required to produce such high purity gold bars.

industry in the form of bullion for government central reserves and traded on stock exchanges. There are three main hubs of gold trading worldwide, namely, London, the United States, and China.⁸³ The remaining eight per cent share of industry demand is used in the manufacturing of electronics, industrial processes, healthcare and dentistry. Having highlighted the importance and interconnectedness of Ghana's ASM sector, and specifically the case studies Akwatia and Tarkwa, to the global networks of diamond and gold production, the next section of the chapter moves on to map the local network structures. Again, it is this information which is needed to inform ongoing formalisation and certification initiatives capable of engaging impoverished informal miners (Objective 2).

Figure 5.2 Ghana interlocking with the global gold supply chain



Notes: *Destination and percentage share of gold exports varies year-on-year but is predominantly to the four countries listed here, see OEC (2018) for the years 1995 to 2016. [†] Yearly average from 2010 to 2016 (World Gold Council, 2018b). Sources: Ghana Chamber of Mines (2014); Human Rights Watch (2015); MinCom (2015b), ICM, (2015); Adogla-Bessa (2017); BullionStar (2016); Jose (2018); OEC (2018); LBMA (2018); World Gold Council (2018a).

⁸³ Globally, three major hubs account for 90 per cent of gold trading: 1) the London over-the-counter (OTC) market which has historically been at the centre of the world's gold trade and where the price is set twice daily by the LBMA. Here, trade occurs directly through dealer networks with many involving the exchange of physical bullion bars between member vaults; 2) the US futures market (COMEX) where trading is based on future prices and usually settled in cash; 3) the Chinese market which includes the Shanghai Gold Exchange and the Shanghai Futures Market, the former being the world's largest physical gold spot market (World Gold Council, 2018c).

5.3 Network embeddedness

Unlike conventional GPN studies, the analyses of local-level ASM activities through the adapted framework built in Chapter 2 (Section 2.3) begins with embeddedness. With an understanding of the factors that have shaped gold and diamond production in each case study locale, the nuances of the particular power structures and networks in Tarkwa and Akwatia become clearer, and in the process, power and value can be better articulated.

To recapitulate (see Chapter 2, Section 2.3.3), the traditional GPN framework outlines two forms of embeddedness. The first, territorial, relates to the ‘anchoring’ of a GPN’s firms in different places, which affects the prospects for development in these locations. However, as with all extractive industries, and particularly ASM, the territorial embeddedness of initial production activities is geospatially fixed by the location of the mineral deposit(s). For Akwatia and Tarkwa this is most certainly the case. The underground deposits of gold and alluvial diamonds found in both locations have been worked artisanally by indigenous populations for many centuries (Dickson, 1969; Silver, 1981; Cleveland, 2014). They were also the main attraction for Portuguese traders who arrived in 1482 and the impetus for the construction of forts along Ghana’s coast – a move made to monopolise West Africa’s gold trade routes – by the Dutch (1598) and British (1631) in the decades that followed. At the height of the European industrial revolution at the turn of the 20th century, Ghana’s precious minerals attracted caravans of foreign expeditioners and capitalists who went on to establish mechanised operations at both study locations (Dickson, 1969). It is therefore the second form, *network embeddedness*, which is the focus of the analyses here. This type of embeddedness relates to the structure of the network and the social relationships between its agents. The analysis presented in this section of the chapter begins by sketching out the evolution of these production networks. It then focuses on the interpersonal level of interactions between miners, buyers, dealers and other agents along the chain of supply at the local level. These are the horizontal linkages: longer term, cooperative arrangements among agents that require interdependence.

5.3.1 Embedding formal local production networks around ‘lead firms’

The foundational premise of the original framework is that a GPN develops around a ‘lead firm’. However, as outlined in Chapter 2 (Section 2.3.2), for ASM, there are no dominant players among the hundreds of thousands of small-scale miners operating in Ghana, with the majority of activities confined to the informal economy. The development of the ASM network structures under investigation are therefore far more nuanced and tied inextricably to past socio-economic events, especially in sub-Saharan Africa, where industrial large-scale mining commenced following exploration by European powers at the turn of the 20th century and expanded rapidly under colonial rule. The story for complex extractive industries such as ASM, which pioneering GPN scholarship clearly failed to take into consideration, is therefore very different.

On the one hand, in both Akwatia and Tarkwa, ASM activities and their networks have, in line with GPN scholarship, emerged and further evolved under the influence of lead firms but in a very different way to that projected in the original literature. In the case of Akwatia, this is Great Consolidated Diamonds Ghana Ltd. (2011–present), and previously, Ghana Consolidated Diamonds (1972–2011) and the British colonial company, the Consolidated African Selection Trust (CAST) (1924–1984).⁸⁴ For over 100 years, the small town with its potholed roads, poor infrastructure and a population (as of 2010) of approximately 22,000 people (Ghana Statistical Service, 2014a, p. 70), has been embedded at the base of the GPN for alluvial diamonds. The first discoveries of diamonds were made in 1919 when Ghana was the Gold Coast Colony, under the control of the British. The country’s Birim deposit has yielded 90 per cent of the rough stones mined in Ghana to date, and remains the core of its diamond production node (Greenhalgh, 1985; Chirico et al., 2010). Today, most of the stones extracted in and around the locality are characteristically small:⁸⁵ 35 to 45 per cent are poor gemstone quality, referred to as *boart*, and sold for use in industrial processes (cutting, grinding, drilling, polishing). But by total volume, Ghana has produced the most diamonds in West Africa to date; between 1920 and 2014, 115 million⁸⁶ carats were recovered from its soils (Janse, 2007; KPC, 2016). Administratively, Akwatia is the capital of the Denkyembour District Assembly, which was carved out of the Kwaebibiriem District in 2012, and now forms one of 26 districts in Ghana’s Eastern Region (Figure 5.3).

⁸⁴ Following the discovery of diamonds in Akwatia, several companies began mining along the Birim River. In 1924, the most significant of these, the British-owned CAST, was established. It was very successful, with exports valued at GBP 460,000 between 1925 and 1929, capitalising on its monopolistic position on diamond mining in Ghana as well as other colonies, notably Sierra Leone (Greenhalgh, 1985). Following independence, Ghana’s mining industry was nationalised and in 1972 a majority share (55 per cent) of CAST’s holdings were transferred to government forming Ghana Consolidated Diamonds. In 1984, the remaining shares were transferred to Ghana Consolidated Diamonds and CAST was dissolved. It entered into caretaker management in 2007, and in 2011, a private company owned by Ghanaian investors acquired the concession from government, forming Great Consolidated Diamonds Ghana Ltd. In December 2017, calls were made in parliament to revoke Great Consolidated Diamonds Ghana Ltd.’s licence as it had, up until that point, failed to deliver on its promise to invest USD 100 million over five years, and failed to fully restart operations and create several thousand of jobs at the mine site (Jafaru, 2017).

⁸⁵ Ghana’s diamonds are known for their small size. These *melee* stones (0.001 up to 0.15 carats / 0.6mm to 3.5mm) trade hands regularly in mixed parcels at international markets, and depending on quality, are used in jewellery making and industrial processes (Chirico et al., 2010; Morbiwala, 2015).

⁸⁶ Calculations based on data from: Chirico et al., (2010); KPC (2016); PMMC (2016).

Figure 5.3 Map of Denkyembour District showing location of Akwatia



Source: Ghana Statistical Service (2014a)

The labour networks found in Akwatia today are deeply entrenched, their foundations, along with the town's cultural and social fabric shaped heavily by the two earlier companies and the concession that has encompassed the town for over 100 years. Active recruitment by CAST and voluntary migration, fuelled by the thousands of miles of 'feeder' roads and railway lines laid by the Gold Coast Government, would stimulate a rapid influx of people to Akwatia in the 1930s and 1940s (Greenhalgh, 1985). Employees of CAST's Akwatia Mine were provided with housing, supplied with pipe borne water and free healthcare at the company hospital, the opportunity to purchase subsidised foods from the company's cold stores, and a chance to compete for scholarships for their children's education. Thousands of others congregated to Akwatia, lured by the company's activities, while scores of local rural families soon found themselves supplying and trading in the town's swelling markets. Most of Akwatia's residents today are descendants of this eclectic group of migrants and locals (Greenhalgh, 1985; Cleveland, 2014).

The small-scale mining labour networks found in Tarkwa are also deeply embedded within a long history of mining in the town that have also evolved under the influence of a lead 'firm(s)'. Tarkwa is one of the oldest mining centres in the country and has been at the heart of successive gold rushes since the beginning of the 1870s. Throughout the late 19th century, local well-educated coastal merchants moved inland establishing relationships with artisanal miners and acting as middlemen to European traders on the coast. Having amassed considerable sums of wealth in the process, a number of these African pioneers⁸⁷ began trying to organise the pit miners into wage labour forces and develop mechanised gold operations. These included concessions in Tarkwa and surrounding communities which were bought

⁸⁷ Notable African concessionaires in Tarkwa in the 1880s included: Mr Dawson of Cape Coast; Ferdinand Fitzgerald, founder of *The African Times*; Dr James Africanus Horton, a medical officer; and W.E. 'Tarkwa' Sam a trained mining engineer who is referred to in some texts as 'the father of the Ghanaian mining industry' (Dumett, 2005, p. 586).

from local chiefs and are among the first known in the country (Allen, 1958).⁸⁸ At one point in the late 1880s, the indigenous artisanal miners and African entrepreneurs of the Gold Coast were supplying perhaps as much as one fifth of the world's gold, with a substantial proportion likely originating from the Tarkwa area.⁸⁹ However, despite the rich gold reserves in Ghana's interior being kept in the hands of Africans for many hundreds of years, in 1877 French adventurer Joseph Bonnat arrived in the town to find thousands⁹⁰ of operators working pits some 20–150 feet (6–45 m) deep and acted quickly to raise capital in order to establish the African Gold Coast Company and acquire a concession (Dickson, 1969).

With the floodgates opened, Tarkwa became a 'wild and brawling frontier town' (Silver, 1981, p.514).⁹¹ Its rich deposits and position at the centre of several trading routes also established it as *the* key node in the country's gold mining sector. Yet due to difficulties with attracting a ready and willing waged labour supply, financing, and the challenges with transporting heavy machinery to the area, many of the foreign companies quickly went bust. Nine out of the 12 corporations that had managed to commence operations during the period were defunct by 1885 (Silver, 1981). It was not until the 1900s when a road and railway line were constructed linking it to the port of Sekondi to the south and on to Obuasi, another centre of gold mining to the north, that Tarkwa became an important trading and administrative hub in the region. A second European 'jungle boom' (1901–1902)⁹² attracted over 400 prospecting companies (Allen, 1958; Dickson, 1969; Gough and Yankson, 2012), and, over the next five decades (1900–1950), a modernised industrial gold mining industry began to take shape. Gold exports soared from approximately 10,000 ounces in 1901 to over 400,000 ounces in 1915 (Figure 5.4). Though dipping slightly during the inter-war period⁹³ (1918–1939), between 1930 and 1950, gold production averaged 550,000 ounces per year, valued at over GBP 2.3 million (Dickson, 1969; Dumett, 2005).

⁸⁸ At the time Ghana was known by Westerners as the Gold Coast – a British colony established in 1867 through the series of forts dotted along the shoreline.

⁸⁹ In 1887 22,546 ounces of gold was exported from the Gold Coast, which in 1893 would have accounted for over 24 per cent of world gold production (Silver, 1981, p. 515).

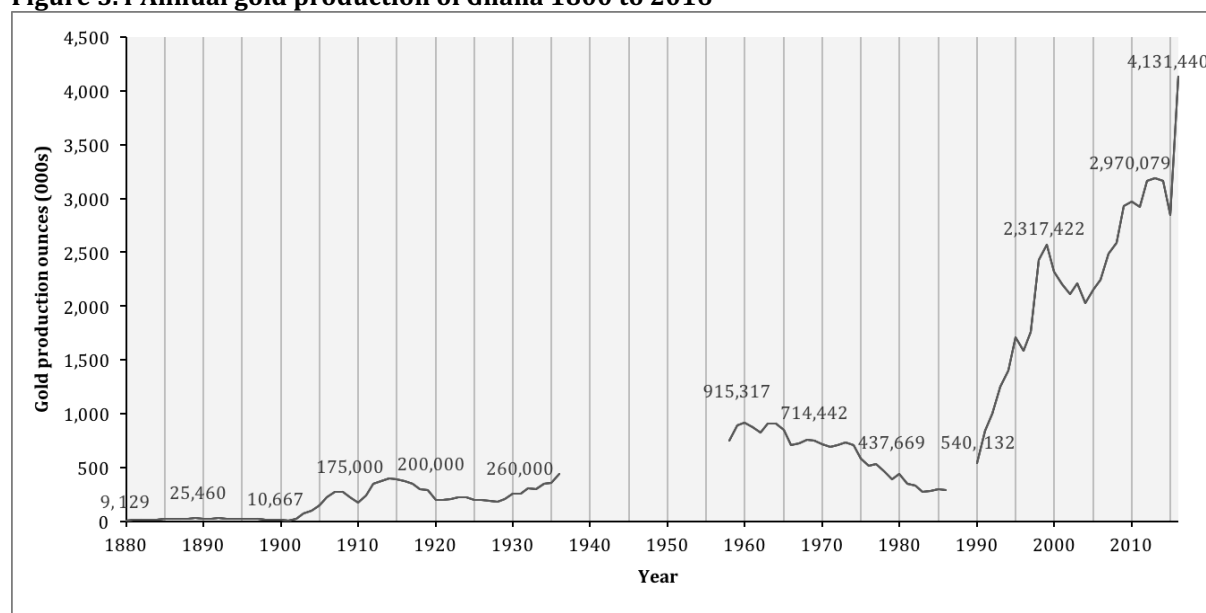
⁹⁰ Silver (1981, p. 513) writes that 'estimates of the total number of African miners at work in the area [Tarkwa] rang[es] anywhere from 1,000 to 8,000 at different periods between 1878 and 1880.'

⁹¹ In the gold rush that followed J. Bonnat, hundreds of tonnes of mining machinery was portaged up river and overland at great cost to support the more than 30 European companies hurriedly engaged in prospecting.

⁹² A number of factors helped spawn the jungle boom, including: 1) reports from South African engineers who had visited Tarkwa in 1897 that the deposits were of equal or higher grade to those in Johannesburg; 2) arrival of the railway in Tarkwa in 1901; 3) coming towards the end of a series of Anglo-Ashanti wars (1823 – 1902); 4) the second Boer War leading to funds being diverted from South Africa to Gold Coast. (Allen, 1958).

⁹³ In the context of 20th century European history the period between the end of the First World War in 1918 and start of the Second World War in 1939 is generally referred to as the interwar period.

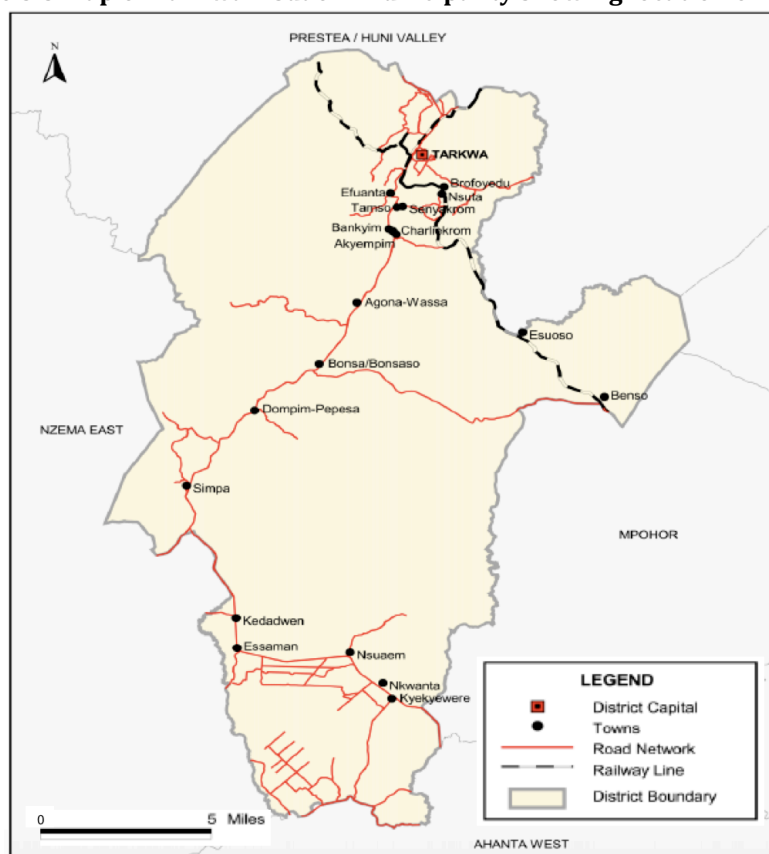
Figure 5.4 Annual gold production of Ghana 1800 to 2016



Sources: 1890–1901 (Silver, 1985); 1902–1937 (Dickson, 1969); 1958–1986 (Akabzaa and Darimani, 2001); 1990–2011 (Van Oss 1994; Coakley, 1997; 2002; Bermúdez-Lugo, 2008); 2011–2016 (Ghana Chamber of Mines, 2011; 2013; 2014; 2016). Note: Data includes export and production statistics and is drawn from a range of source material that does not always specify whether data is ounces or troy ounces. Figures and graph should therefore be used as a guide to show the overall trend.

The population of Tarkwa also successively swelled with the influx of an ethnically-diverse labour force in search of work in the industrial mines and artisanal pits dotted in the communities around the township. There continues to be a steady stream of in-migration: a significant proportion of the 90,000-strong population found in the Tarkwa-Nsuaem Municipality today (Figure 5.4; Ghana Statistical Service, 2014b) are second or third generation migrants drawn from across the country (Gough and Yankson, 2012; Table 5.2). Following independence in 1957, the majority of Ghana's gold mines were subsumed under the Ghana State Mining Corporation, and then later privatised in the 1980s and 1990s in line with the programme of reforms outlined in Chapter 4. As was the case elsewhere, in Tarkwa the reforms pushed thousands of people into the ASM sector further embedding the informal networks of production at work today.

Figure 5.5 Map of Tarkwa-Nsuaem Municipality showing location of Tarkwa



Source: Ghana Statistical Service (2014b)

Table 5.2 Population of Tarkwa town and percentage employed in mining and quarrying

	1878 – 1880	1948	1960	1970	1984	2000	2010
Population	1,000 – 8,000	8,000	13,246	4,702	22,107	30,631	27,954
Percentage employed in mining and quarrying	-	-	12	-	-	14	22

Source: Silver (1981); Gough and Yankson (2012); Ghana Statistical Service (2014b).

Today, the impact of gold mining on the town remains immediately apparent. There are two large-scale gold mining companies sited at either end of the town. There are also an additional 10 or so 'lead firms' mining other minerals, such as the Ghana Manganese Company,¹ or located several kilometres or more outside of the town's perimeter, such as Gold Field's Damang Mine at Abosso 5 km to the north (Gold Fields, 2018). An analysis here of the two 'lead firms' helps to situate them within the case study site and highlight the influence these large-scale gold mining companies have had on shaping the town's history and contemporary ASM activities. Arriving into Tarkwa from the southwest via the main road sits the entrance to the Iduapriem mine, a 110 km² open-pit gold concession that has been wholly-owned and operated by AngloGold Ashanti since 2007 (AngloGold Ashanti, 2012). Though mining at the concession only began in 1992, meaning its historical impact on embedding the town's ASM production networks has been more limited than CAST's and other firms in Tarkwa, in 2016, the mine produced 214,196 ounces of gold, accounting for approximately 5 percent of national production, and provided employment for 1,576 people (621 permanent and 955 contractors – Figure 5.3) (AngloGold Ashanti, 2016).

A second, more influential, ‘firm’ is the Tarkwa Mine, which is now owned and operated by South African mining giant Gold Fields Ltd. Stretching for over 5 km along the Western edge of the town, the 200 km² concession is one of the oldest and largest producers of gold in the country.⁹⁴ In line with the process of privatisation and reforms outlined in Chapter 4, in 1993, parent company Gold Fields South Africa (becoming Gold Fields Ltd. in 1998) entered into a management contract to acquire and operate the mine under the subsidiary Gold Fields Ghana Limited.⁹⁵ The Government of Ghana retained a 10 per cent share in free carried interest⁹⁶ as per the *Minerals and Mining Law, 1986* (Gold Fields, 2009; 2010; 2018b; 2018c).

Table 5.3 Numbers of people employed at main large-scale gold mines in Tarkwa town

Year	AngloGold Ashanti Iduapriem Mine	Gold Fields Tarkwa Mine
2005	1,283	None available.
2010	1,483	4,153
2015	1,565	2,400
2016	1,576	None available.

Source: AngloGold Ashanti (2006; 2011; 2016); Gold Fields (2010; 2015; 2018a). Note: data do not disaggregate between direct and contract employment.

In 2011 Gold Fields Ghana Ltd. Became the majority shareholder and (as of 2010) employed a workforce of 4,153. However, by 2015, this had been reduced to 2,400, and at the end of 2017, the mine announced it was moving to outsource operations, which put several thousands of jobs at risk (Gold Fields, 2010; 2015; 2018a). As it has throughout history, the mine remains one of the most important in the country, and indeed on the continent, producing 568,036 ounces of gold in 2016, accounting for 14 per cent of national production (Ghana Chamber of Mines, 2016; Table 5.4). Like Akwatia, the labour networks and ASM operations in Tarkwa, therefore, coalesced around and have been shaped by a number of key firms as well as artisanal operations themselves over a period of 100 years or more. Today, the entire town and its communities are dependent on mining as well as the linkages and ancillary activities it has spawned: as Gough and Yankson (2012, p.664) aptly put it, ‘when the mining economy suffers a downward trend the whole town economy suffers’. The contemporary production networks found in both locations today are therefore deeply embedded in the historical fabric of the town, an understanding of which is vital to better explaining and articulating the functioning of current ASM activities, as well as the challenges with formalisation and certification.

⁹⁴ The site was first mined by several pioneering firms during the 1887 gold rush and by the 1900s, was one of the largest in the country. For example, (Dickson, 1969, p. 188) the Abontiakoon Block 1 Company, one of the first recorded enterprises operating on the site, was reported as having ‘the largest number of heavy stamps’⁹⁴ in the south of Ghana. The mine’s significance in Ghana continued and in 1935, the Akbontiakoon vertical shaft was sunk by a collection of overseas mining firms (incorporated under the name Amalgamated Banket Area Limited). The shaft remained in operation until 1999. However, despite its importance at the dawn of Ghana’s industrial mining sector, by 1960 all the workings were abandoned and allowed to flood. In 1961, production was resumed under the State Gold Mining Corporation, renamed to Tarkwa Goldfields Limited, and an additional shaft was sunk in the mid-1970s.

⁹⁵ Gold Fields Ghana Holdings Limited (GHGHL – the subsidiary owned by parent company Gold Fields Limited) held 71.1 per cent of shares, Toronto based firm IAMGOLD and affiliates 18.9 per cent, and the Government of Ghana 10 per cent in free carried interest.

⁹⁶ Common in mining legislation in sub-Saharan Africa, free carried interest refers to the government receiving a percentage of the shares / profits regardless of whether they invested in the initial funds.

However, while it was, by and large, the establishment of the early diamond and gold mining companies in Ghana that first attracted large numbers of people to the areas and opened them up to in-migration and small-scale mining in the process, on the other hand, and a slight departure from the GPN literature, it was the deterioration and *not* the success of these 'lead firms' that have galvanised and embedded the networks of ASM production and clusters of economic activities in Akwatia and Tarkwa over the past century. A detailed examination here of this embedding *process*, and specifically the trust-based relationships that have formed along with it, helps to further explain how the sector functions at the local level (Objective 2).

Table 5.4 Percentage contribution of large-scale mines and licensed small-scale miners in Tarkwa to national annual gold production (ounces)

Year	National annual production	Gold Fields Ghana Tarkwa Mine	Per cent*	AngloGold Ashanti Iduapriem	Per cent*	PMMC (ASM)	Per cent*	Minerals Commission Tarkwa (ASM)	Per cent*	Per cent †
1993	1,251,016	39,256	3	123,298	10	35,591	3	-	-	
1994	1,397,848	39,352	3	118,604	8	89,520	6	-	-	
1995	1,706,784	44,432	3	124,938	7	125,323	7	-	-	
1996	1,582,168	47,454	3	117,961	7	112,064	7	443	0.03	0.47
1997	1,757,422	53,756	3	146,607	8	107,094	6	558	0.03	0.52
1998	2,428,696	134,776	6	155,224	6	60,218	2	570	0.02	0.95
1999	2,570,320	259,617	10	163,711	6	74,011	3	477	0.02	0.64
2000	2,317,422	362,403	16	166,894	7	63,273	3	657	0.03	1.04
2001	2,205,500	524,989	24	205,121	9	46,490	2	911	0.04	1.96
2002	2,115,200	523,510	25	185,188	9	156,895	7	792	0.04	0.50
2003	2,208,200	554,889	25	243,542	11	163,744	7	750	0.03	0.46
2004	2,029,963	-	-	-	-	-	-	778	0.04	
2005	2,149,339	-	-	-	-	-	-	942	0.04	
2006	2,244,680	720,877	32	192,483	9	159,415	7	3,773	0.17	2.37
2007	2,486,821	654,352	26	185,158	7	239,331	10	18,951	0.76	7.92
2008	2,588,228	-	-	-	-	-	-	2,369	0.09	
2009	2,930,300	-	-	-	-	-	-	2,185	0.07	
2010	2,970,079	735,034	25	185,488	6	346,861	12	14,214	0.48	4.10
2011	2,924,385	717,342	25	199,004	7	235,787	8	9,346	0.32	3.96
2012	3,166,483	718,459	23	180,238	6	316,699	10	10,567	0.33	3.34
2013	3,192,648	632,244	20	220,658	7	216,381	7	-	-	
2014	3,167,755	558,222	18	176,930	6	265,350	8	-	-	
2015	2,848,574	586,051	21	192,522	7	267,662	9	-	-	
2016	4,131,440	568,036	14	214,196	5	1,570,029	38	-	-	

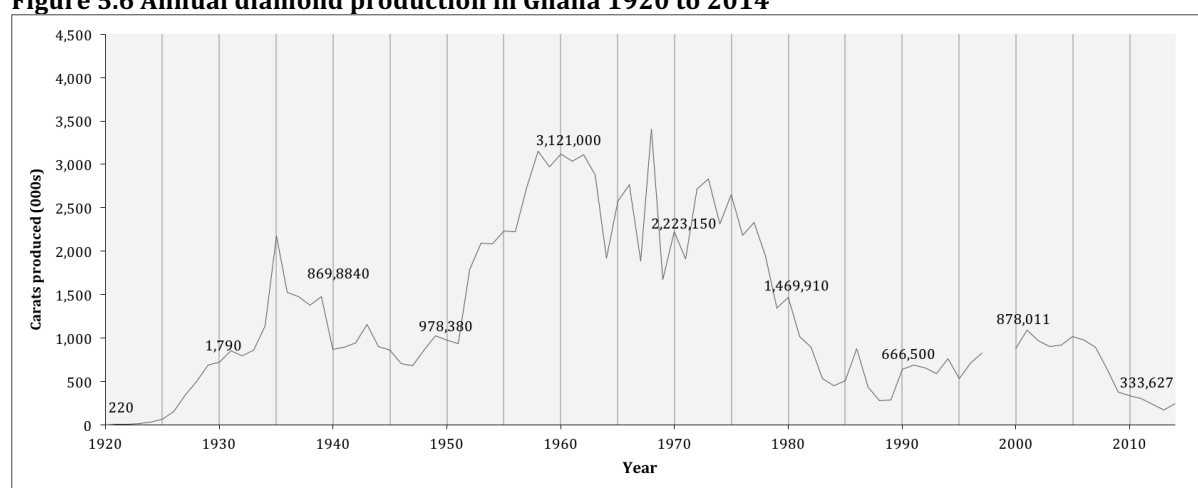
Sources: 1993–2011 (Hilson, 2001; Van Oss 2014; Coakley, 1997; 2002; Bermúdez-Lugo, 2008); 2011–2016 (Ghana Chamber of Mines, 2011; 2013; 2014; 2016); MinCom (2015). Note: Not all dated from source material is listed as to whether it was troy ounces or ounces, some has also been converted from kg to ounces. The data should therefore be treated with some caution and used as guide demonstrating the overall trend or production.

*Percentage of national annual production † Percentage of annual PMMC production. PMMC production is gold bought from small-scale gold miners or gold buyers who source from small-scale miners, licensed or unlicensed.

5.3.2 Embedding informal, trust-based, social production networks

In Akwatia, it was the hostile takeover by state-owned Ghana Consolidated Diamonds in the early 1980s that *embedded* the town's alluvial diamond economy and fortified its networks and clusters of ancillary industries. Output from the company, which failed to overhaul its obsolete production facilities, declined rapidly, forcing management to lay off hundreds of its staff, most of them carryovers from CAST (Figure 5.6). As one company official, reflecting on the impact of this retrenchment, explained in an interview, 'the future of mining, it's going down ... many workers have been laid off, so the town is almost a ghost town That wasn't the case [before 2007]'.⁹⁷ Frustrations over not benefitting from diamond mining rapidly mounted in the community where, reportedly, the streets once glistened with stones after heavy rains, and where more recently, people have dug up floors and knocked down the plastered mud brick walls of old buildings to sieve for the diamonds contained within them. Another company official summed up what was clearly a deteriorating situation at the time in an interview, highlighting how 'the town almost depends on GCD to survive and if GCD is not there, Akwatia town is not there'.⁹⁸

Figure 5.6 Annual diamond production in Ghana 1920 to 2014



Sources: Data from: Chirico et al., (2010); KPC (2016). Note: no data exists for 1998 and 1999.

These layoffs, coupled with a decline in diamond production (Figure 5.6) and unpaid salaries, mobilised most of the remaining and former employees; following clashes with security and police, they started to engage in dialogue with Ghana Consolidated Diamonds management. A deal was eventually struck which spawned the Tributer System, described variously as a 'marriage of convenience' (Nyame and Danso, 2006) and 'peaceful cohabitation'⁹⁹ between Ghana Consolidated Diamonds (and today, Great Consolidated Diamonds Ghana Ltd.) and artisanal miners. A company official elaborated on the agreement in an interview:

⁹⁷ Interview, 5th August 2014, farmer and diamond miner.

⁹⁸ Interview, 19th November 2015, GCDL official.

⁹⁹ Interview, 20th August 2014, GCDL official.

In a way, it's a symbiotic relationship. They [tributers] feed off our [the company's] leftovers but they also sometimes have their native — you know — technology ... they are geologists in their own right; they find something then we go there and do some work and establish what they may have found. But they have also been helping us in policing the property, OK, they be helping us because they, when you don't belong to the group and you doing any work they [alert] us and then we come.¹⁰⁰

The Tributer System¹⁰¹ was supposedly 'introduced by the company as a social intervention' touted as 'a way of generating employment for the community and Ghanaians in general to improve upon their standard of living' (GCD, 2011). Yet, it has been solely this 'marriage of convenience' that has kept it afloat: whereas in 1989, tributers were producing 40 per cent of Ghana Consolidated Diamonds' diamonds, by 2001 this figure had risen to 95 per cent, and by 2007 almost 100 per cent: 865,610 carats, valued at over USD 27 million, were mined by artisanal miners operating on the concession (Hilson, 2010a, p. 303; Hilson and Clifford, 2010). Reflecting once again on how, in the literature, 'the firm' has been projected as the focal point of GPNs, it is clear that in Akwatia the changes that have occurred since Ghana Consolidated Diamonds management implemented the Tributer System have galvanised and fortified the artisanal diamond mining networks and structures found in the town today.

The situation in Tarkwa could not be more different. Here, no such tributer arrangement or 'symbiotic relationship' exists. Instead, the interactions between small-scale miners and their communities with the various large-scale gold mining firms in and around Tarkwa over the years has been overwhelmingly underscored, at best, by protest, tension and class struggle for better working conditions, and at worst, violence, and even conflict over access to land and the rights of (ASM) operators to mine. Effective protests are a thing of the past (Crisp, 1984; Hilson, 2002b; Aubynn, 2009; Okoh, 2014; Patel et al., 2016). At the start of the 20th century, industrial gold mining companies relied on large pools of locally-available manual labour. With the means of production and agency in their hands, miners were empowered through unions to effect real change in working and living conditions by taking direct action. However, as production became increasingly-mechanised and required smaller pools of more highly skilled labour sourced from further afield, the balance of power shifted and the effectiveness of protests, though disruptive, reduced. Through the series of measures outlined in Chapter 4, in the 1980s operations were privatised and rationalised, the supply and appeasement of local labour became less of a priority for management, and mines developed as 'enclaves' relatively disconnected from the local communities and economies in which they were historically embedded (Hirschmann, 1958; Heeks, 1998; Ayree, 2001; Bloch and Owusu, 2012; Larsen et al., 2009; Hilson, 2017c).

¹⁰⁰ Interview, 20th August 2014, GCDL official.

¹⁰¹ The Tributer System is an arrangement whereby prospective small-scale diamond miners apply for a licence from the mining company to mine in one of the demarcated areas on their concession. On application, GCDL will assess the proposed location and if approved grant the licence to mine that plot of land. Tributers must undergo health and safety checks, and pay for 'tokens' in accordance to the number of labourers that have working on their sites. In return, small-scale miners must sell their diamonds won back to the company at the price it determines.

This helps explain why, following Gold Field's takeover in 1993 and through the transition from underground shaft mining to open-pit operations in the late 1990s, the operation has been able to secure its perimeter with relative ease and keep the wider community at arm's length. This is despite the relocation of two entire villages and the removal of entrenched gold buyers and small-scale miners operating illegally on the concession which, in most circumstances, would likely lead to significant community backlash. A further reason is found through a comparison of the divergent relationships between the local community and the two separate large-scale mines owned and operated by Gold Fields in Tarkwa and Damang. Teschner (2013, p. 336) explains how the illegality of small-scale miners operating on the former has empowered the company to essentially 'dis-embed' itself from the local ASM network:

[T]here was never any legal ASM taking place on the Tarkwa concession, so managing ASM prohibition was significantly simplified. No ASM concessions required compensations or dubious re-issuance by the Minerals Commission. Since the relocation and compensation of the two villages, ASM-company interactions have been limited to the peripheries of the concession and been managed with dialog[ue] between ... Gold Fields, community leaders and elected officials. Unlike Damang, most of the ASM activity in the Tarkwa area now occurs off the company's concession rather than on it. Hence, encroachment around the edges of the concession is the primary concern of Tarkwa's security and community relations staff rather than preventing and controlling mass incursions into the central areas of the concession.

This point therefore reinforces the *legalist* argument (De Soto, 2000) highlighted previously; without a foothold or protection in the formal economy, small-scale miners are confined to informality and cannot be reached by government or support services. Thus, while in Akwatia, it was the deterioration of the Ghana Consolidated Diamonds mine in the 1980s that helped embed the town's alluvial diamond economy, in Tarkwa, it was the mechanisation of the large-scale companies and their failure to create, sustain, and stimulate sufficient jobs and local socio-economic development that have further fortified the historical networks of informal ASM production. In both cases, and to elaborate on the point raised at the beginning of this section, 'lead firms' have shaped ASM activities in ways that are different from how the GPN literature traditionally portrays their role as being directly at the centre of the network and around which additional activities develop. Unlike in Akwatia, where Great Consolidated Diamonds Ghana Ltd. is reliant on local labour and ASM for its survival, in Tarkwa, there is no longer a significant economic incentive for the highly-mechanised large-scale mining companies to attract large numbers of labourers or to source supplies from local communities (Table 5.3). Moreover, there is no need for these firms to engage with small-scale miners and communities beyond what is deemed necessary to meet legal requirements and ensure a continued social licence to operate through various programmes.¹⁰²

¹⁰² Gold Field's 2016 annual report (Gold Fields, 2016) highlights several community engagement programmes designed to 'create and share value' in Tarkwa including: rehabilitating roads; youth employment in agriculture programme; construction of a laboratory and scholarships to attend UMaT; and numerous health, sanitation and water infrastructure projects locally.

Table 5.5 Measures of Gold Fields embeddedness with local communities

Country	Local (in-country) procurement (%)				Host community procurement (%)				Host community workforce employed from total (%)		
	2013	2014	2015	2016	2013	2014	2015	2016	2014	2015	2016
Australia	99	99	97	99	72	69	66	71	94	90	95
Ghana	68	72	64	79	6	6	9	7	66	67	72
Peru	91	88	87	89	6	5	7	8	24	29	23
South Africa	86	91	85	92	4	9	10	14	12	14	13

Source: Gold Fields (2016)

Combined, the data in Tables 5.2, 5.3, 5.4 and 5.5 further support this argument. It is clear that gold production in the town has increased dramatically over the past two decades. Between 1999 and 2016, output at Gold Field's Tarkwa mine more than doubled, while at AngloGold Ashanti's Iduapriem Mine it has increased by one third (Table 5.3). This has been achieved without the need to increase the labour force at anywhere close to a similar rate (Table 5.2 and 5.3) or, in the case of Gold Fields, the need to source more than 10 per cent of services and materials from the immediate community (Table 5.5). The high percentage (72 per cent) of the total workforce being employed from the host community at Gold Field's two Ghana mines, when compared to their operations in Peru and South Africa, suggests the ready availability of a skilled workforce. AngloGold Ashanti has also reported high levels of total spend on local suppliers and employment of Ghanaian nationals at its Iduapriem operations in recent years, at 84 per cent and 93 per cent, respectively, in 2012 (AngloGold Ashanti, 2012). This, in turn, is a reflection of the town's historical significance at the centre of the country's gold industry, not a concerted effort made by the firm to develop the town's skilled labour. It is also due to Tarkwa being the location of the University of Mines and Technology (UMaT), a reputed tertiary educational facility. As further evidence of the large-scale mining bias critiqued in Chapter 4, this government-funded institution produces approximately 600 highly qualified graduates a year who go on to compete to fill the limited number of jobs available in the surrounding mines during their national service and future careers.

Understanding the past history of engagement between firms and small-scale miners at the local level through the adapted GPN framework is essential, given that they influence the contemporary functioning of ASM production activities. But what has led to such marked differences in the relationships and structure of ASM networks found in both study sites today? While the events that have unfolded at each location have not led to any discernible differences or increases in the improvement of socio-economic outcomes for small-scale miners and their communities, three developments stand out in particular. These are also key to understanding the contemporary functioning of ASM operations and the evolution of the deeply-embedded trust-based relationships that exist today.

5.3.2.1 Development of 'support' services by non-state actors

The first development, and following a blueprint reminiscent of the legalist argument put forward by De Soto (2000, 2002), in lieu of government support, in Akwatia, management at Ghana Consolidated Diamonds 'formalised' the scores of former and existing employees who were mining illegally on the company's concession, therefore officialising their existence as 'tributers'. Each was given an ID card, required to sell all stones to the company, and made to pay a nominal fee. These rules still apply:

applicants must first identify a plot of land on the part of the concession that has been put aside for small-scale miners and/or already been worked by the company (specifically, areas where the ore grade is low or it has been deemed uneconomical by management for the company to mine), must undergo health checks at the company hospital, and cannot work until the Survey Department gives its approval. Upon meeting these criteria, the application is forwarded to the Ghana Consolidated Diamonds Tributer Committee (retained by the current operator, Great Consolidated Diamonds Ghana Ltd.), which represents all small-scale miners on the concession and acts as the formal grievance and communication mechanism between the two parties. Once approved, the tributer must pay compensation to the landowner and farmer (if present), at an amount decided by Great Consolidated Diamonds Ghana Ltd. and previously, Ghana Consolidated Diamonds. As part of the formal process, the tributer is given a basic induction concerning security, health and safety and a list of 'do's' and 'don'ts', which are listed in Appendix 1 of the *Tributer Mining System* pack (GCD, 2011; Hilson and Clifford, 2010).

Artisanal and small-scale miners in Tarkwa have not been so fortunate. As explained in Chapter 4, set against a history of limited and largely-ineffective government interventions in Ghana, as well as more widely in sub-Saharan Africa, impoverished informal operators have been forced to look elsewhere for support. Whereas Ghana Consolidated Diamonds formed working relationships through the Tributer System in Akwatia, with no real need or legal requirement for mining companies to meaningfully engage with or formalise illegal small-scale miners on their concessions, in Tarkwa, no such 'marriage of convenience' exists. The gap in state support for miners at the local level has instead been filled by an array of actors (Table 5.7) now deeply embedded in the local semi-formal economy. One example is Chinese businesspeople, many of whom provide indirect support in the form of machinery, improved production methods (value enhancement) and knowledge transfer to both licensed and unlicensed small-scale miners. The influence of the Chinese is very visible in many ASM communities across Ghana. The same is true in Tarkwa, where upon reaching the main part of the town, the imposing marble-clad Chinese-run hotel and restaurant *Longji* (complete with outdoor pool and bar) rises to the left. It is flanked on one side by lush green bush interspersed with cement-block single-storey houses, and on the other side by a string of small-scale mines, where labourers can be seen loading hard rock ore into large Chinese supplied yellow trommels amid the deafening currents of *Chang Fa* machines. The influence of Chinese support is also visible at mines in other parts of town.

Referring back to the theoretical framework presented in Chapter 2 (Section 2.3.3), Odera's (2013) Business Cooperation Dimension explains how in the vacuum left by formal institutions, in this case, the absence of government support for informal or indeed licensed operators at the local level, co-created, reciprocal trust-based relationships are built between various actors in the pursuit of mutually beneficial goals. In this way, it is argued here that inaction, or inadequate/inappropriate support provided by government has further entrenched the ASM sector and embedded its inhabitants in the semi-formal economy, where the relationships between actors have inevitably strengthened. Discussions with local government officials confirmed as much. Despite being understanding of the plight of local impoverished communities engaged in *galamsey* activities, the prevailing view was not to intervene and provide any

form of support services to help improve the situation over fear of encouraging informal operatives further:

Illegal mine sites we have, but normally what happens is that the illegal mines sites we don't go there frequently. Because one thing about it is that err we don't give them technical services as if we ran technical services team there is a license fee and moreover they are working on people's concessions. So definitely if you are monetary [supporting] them you are trying to create them to continue with the illegal mining situations. You understand?¹⁰³

This attitude toward unlicensed operators in Tarkwa is likely a reflection of a combination of elements discussed in Chapter 4, namely being embedded in the wider national level opportunity structure, a constraining government agenda, and under a regulatory apparatus that prioritises large-scale mining. However, while the services available to *galamsey* operators are non-existent, those on offer to licensed small-scale miners are not exactly supportive. Nor are they a part of a wider formalisation strategy 'to foster the establishment of resilient [ASM] communities' as espoused in the AMV (AU, 2009, p. 32). Described by officials in a number of different interviews, the activities that are carried out were therefore largely confined to monitoring, inspection, basic technical advice, and data collection:

Err ... support services is normally, we, the office what we do is to give technical services. To those that have allowances [support/licences]. They are the technical services. How the mine presents good mining services and operations. When we go there, we look at the way you are mining, whether it is risky to be the people who are working in the places. And how you maintain your place. So, when we come and we see that there is a danger somewhere, we stop the work and make sure that you clear the surface.¹⁰⁴

I am going there to errr check the activities that are going on within the errr small scale mining and errr concessions. And err right now we are based on the licence concessions. As for the *galamsey* we have told them plainly that we don't deal with the *galamsey*.¹⁰⁵

If support for operators is limited in Tarkwa, where there is a local Minerals Commission district centre in place as well as the offices of the municipal assembly, including a local branch of the EPA, what level of assistance can be expected in more remote and impoverished ASM communities that are well out of the reach of local government and services? In light of findings reported in Chapter 4, a lack of local level autonomy and budgetary freedom and constrained finances are likely partly to blame. The relative lack of state support afforded to licensed and unlicensed small-scale miners in both Akwatia and Tarkwa has therefore been a key 'development' that has had a significant influence on the shape and functioning of the ASM production network structures found in place today. The situation has forced operators to look

¹⁰³ Interview, 17th February 2015, local government official.

¹⁰⁴ Interview, 17th February 2015, local government official.

¹⁰⁵ Interview, 18th February 2015, local government official.

elsewhere for support. In the case of the former, this has been the ready and ASM-reliant GCD/GCDL, while for the latter, it has been the range of local-level actors such as Chinese businesspersons and 'sponsors'. These networks are examined in greater detail in the proceeding sections.

5.3.2.2 Development of semi-formal markets

The second development that has shaped the contemporary ASM network structures – and which is evident at both study locations – has been the establishment of local markets where the various micro-level actors cluster to trade their precious minerals. These key nodes of semi-informality are where Ghana's formal and informal mining economies intersect (Phillips, 2011). In Akwatia, this is the Belgium Market. Located in a small *cul-de-sac* at the end of the main 'Junction' in the centre of the old town, this socio-economic interface consists of 10–15 dilapidated stalls and shacks, each manned by a buyer and/or sponsor. Today, it is the main selling and buying point for diamonds in Ghana, mainly because of Ghana Consolidated Diamond's struggles (and today, the inability of Great Consolidated Diamonds Ghana Ltd.) to offer competitive prices for stones harvested by tributers (Hilson, 2010a; Hilson and Clifford, 2010). A company official confirmed as much in an interview, explaining that these companies were unable to capture more than 50 per cent of the diamonds from its concession.¹⁰⁶ Several miners reported the same:

[GCDL] will pay you but the money is not enough as from the [Belgium] market.¹⁰⁷

[I sell] part GCD and part my sponsor ... I send it to my sponsor it is very higher than there [GCDL] ... we are supposed to sell everything to them [GCDL], but because of all the [sponsors], yeah ... it's verbal, yeah verbal agreement.¹⁰⁸

[GCDL] ... they will delay payment ... maybe three days, four days.... That is their own way of doing things. Maybe it have to go through processes.¹⁰⁹

The officials consulted at Great Consolidated Diamonds Ghana Ltd., however, seemed to recognise the semi-informality created by the company's struggles to purchase diamonds from tributers. They were also accepting of the growing importance of the Belgium Market in light of this failure. One official in particular was very sympathetic, explaining that:

The law says they [tributers] should sell everything to us ... [but] you see of late mining has become increasingly costly, so the tributers most of the time they don't have the money, that kind of money, so they go for sponsors, so some of the partners team up with people who have money and those people also demand the product [diamonds] ... it is not the law but we give them quota to bring.¹¹⁰

¹⁰⁶ '40 to 60 per cent of stones were wasting away' – Interview, 20th August 2014, GCDL employee.

¹⁰⁷ Interview, 4th August 2014, diamond dealer, Belgium Market.

¹⁰⁸ Interview, 5th August 2014, tributer at mine site in Akwatia.

¹⁰⁹ Interview, 4th August 2014, a local chief, chief compound, Akwatia.

¹¹⁰ Interview, 24th November 2015, GCDL official.

A sympathetic 'blind eye' has also been turned on the multitude of local level gold buying and refining shops clustered in the centre of Tarkwa where the town's formal and informal gold mining economies meet. Unlike Akwatia's Belgium Market, there is no one distinct semi-formal trading space in Tarkwa. Instead, a 400 m stretch of the old defunct railway line that is hidden behind a row of shops and runs parallel to the main road through the centre of town, now serves as a key node of social and economic activity. Here, 27 gold buying shops and agents¹¹¹ emblazoned with their company details were recorded. A further 14 were also counted in town, sited along the main road as well as in the back streets near the bustling market and bus interchange.¹¹² There is some stratification within these 41 shops depending on their capital. For example, two 'smaller' gold buying shops along the railway line reported that they sold their gold to a local Ghanaian 'agent' whose shop is located 100 m or so further along. Although these shops will buy gold from anyone, the smaller shops tend to source directly from small-scale miners and bush agents before then refining (if necessary) and smelting the gold together and selling to the larger ones. There are also small buying shops located in ASM communities outside of Tarkwa. The larger buying shops and agents source mainly from other shops as well as mine site owners so that they can capture significant quantities of gold as required and broker deals to export directly, or sell to foreign buyers located in Tarkwa and Accra.

These transactions are captured in Figure 5.7. However, in reality, each arm of the network is complex and factors such as sponsorship, pre-existing relationships, and the price offered (calculated using the current world market price accessed through smart-phones) will all determine where and to whom someone will sell their gold. For example, as was also found to be the case by Fold et al., (2013) many of the small and medium-sized Tarkwa buying shops have networks of shops and bush agents outside of town which they may sponsor anywhere upwards of GHS 1,000 or have established regular buying arrangements with. The sponsorship is accounted for in the agreed price that the gold is bought back at. In terms of value capture by this array of actors, and again fitting with Fold et al., (2013), the prices on offer are very close to the world market, perhaps just three to five per cent below, with the lowest prices in the 'bush' and highest offered by the largest foreign agents. Similarly, profits increase the higher up the chain as greater amounts of gold are traded, even so, it is typical for actors to make only GHS 10-20 per pound. In Tarkwa town, as well as in the rural communities around, it is common to find refined gold in purities of over 95 per cent (23 carat) which is calculated in shops using the specific gravity method.¹¹³

Though each shop is meant to be in possession of a gold buying licence purchased annually from PMMC, it was not clear to what extent each one did nor whether it was currently valid (see 5.3.3.3). Furthermore, every single shop, agent, and buyer spoken to (including PMMC) openly admitted to sourcing gold from both *galamsey* and licensed operations, or stated they do not ask where the gold comes from. This has

¹¹¹ See Table 5.6 for an explanation of, and to distinguish between, the roles of various actors.

¹¹² Field notes, 21st July 2015. The day was spent undertaking an ad-hoc survey of the gold buyers in town counting shops and asking the same set of questions.

¹¹³ The specific gravity method is a cost-effective yet accurate way to determine the purity (carat) of gold. It is based on the principle that known materials have specific densities. First the amalgam is weighed in air, and then again in water to determine its density as a ratio between the first weight by the second. The value is then compared to a chart which contains the density range of different gold carats. For example, 24 carat gold has a density of 19.13–19.51 per cent.

important implications for the traceability and transparency required by mineral certification schemes. The result is that the entire town essentially forms the semi-formal trading space with the transactions taking place in key nodes of activity and the buying shops which draw in gold and people from over 100 km away.

Figure 5.7 Example of Tarkwa gold supply chain from mine site to Accra



Source: Various interviews; Fold et al., (2013). Note: 10 blades = 1 'pound' = 0.8g. Figures are provided as a guide as reported in interviews undertaken in July 2015. Overlaps between the categories as well stratification within may occur and the exchange of gold may not occur linearly. For example, a bush agent may travel to Tarkwa to sell their gold, while a shop outside Tarkwa may have links directly to local and foreign agents.

There are also a small number, of perhaps 10-15,¹¹⁴ shops that are very discreetly hidden behind reinforced doors with metal bars. These are the local and foreign agents. A portion of which were referred to by many of the lower tier buying shops as being the locations where the 'white men'¹¹⁵ are that they sell their gold to. The one shop where access was gained is home to an Indian buyer brought to Ghana to work for his 'boss' in Accra. His boss, in turn, had contracts with international buyers and holds a buying licence which, at the time, entitled the company to export directly to places such as India and Dubai. Unable to penetrate the lower levels of the network due to the complexity of local trust-based trading relationships, the shop employee explained how the foreign buying company had established a business strategy of sourcing their gold from the larger gold buying shops and local agents located in Tarkwa, just below them in the chain of supply (Figure 5.7):

We buy from local buyers. There's many shops ... on gold buying. You just hand pick them and then make them work you know. Because it's not possible for us, people like us [foreign buyers] to be moving to real mining areas and buy some. And then even it's not very good because at that ... at that real moment between the local buyer and the main source of mining there's some people who also buy from them so it's a chain like they form, like when the gold comes. There's some other buyers, small, small buyers who buys out there. They buy it from them; they will sell it to the local buyers and then they come to us and we export.¹¹⁶

The discussions with many of the owners and employees of gold buying shops located in the centre of town, as well as those in communities over 30 km away, cast further light on the shape and complexity of

¹¹⁴ 'Because you know for me I know 10, 15 people here in Tarkwa [that are of a similar level]. But it's more in Accra so for that exact reason you have to go there.' Interview, 21st June 2015, Indian gold buyer in Tarkwa.

¹¹⁵ 'The fellow is a white man' Interview, 22nd July 2015, gold buying shop.

¹¹⁶ Interview, 21st June 2015, foreign gold buyer.

the network structure. For example, when asked which areas the six staff at one shop visited in the centre of town are dispatched to, an employee listed numerous places, some of which are located a day's drive or more away. The list included Elubo, a town that is a 100 km drive west of Tarkwa on the border with Côte D'Ivoire:

Obuasi [100 km away], Elubo ...everywhere ... my boss is having a pick-up [truck] so, at times they use it to go there ...Nsuaem [40 km away] everywhere ... It depending [sic] on the calls ... yeah [the calls] that we have, maybe some will just call, maybe 'I'm having this so come for it'. This business is all about contacts. It is a favour. If someone has favour for you, he would like to give you everything that we have ... there are gold buyers in Elubo but at times it depends on the price too. The price that, maybe I'm buying it, someone in Elubo is not buying. So, right now everybody is in for money.¹¹⁷

Conversations with *galamsey* operators in some of these and nearby communities also revealed the correspondingly vast extent of the labour networks drawing people to the area. A number of young male labourers at one site told how they had been drawn to Tarkwa from as far as Bolgatanga, a gold mining town over 700 km to the north on the border with Burkina Faso.¹¹⁸ Other *Frafra*¹¹⁹ and French-speaking miners had migrated from various towns in Burkina as well as in neighbouring Côte D'Ivoire, also on the recommendation of trusted friends and family members already engaged in ASM activities in the town:

Please, that's where I have all my family members but being here in Ghana is like me having moved to a different country to hustle for money. And well, I'm here because of this same hustle. ... Okay, when I came, I already had sisters here in [detail removed] whose place I visit frequently but it was my friends who introduced me to the *galamsey*.¹²⁰

In another example, a member of the armed forces revealed his plan to travel north to a gold mine being run by his friend in order to make extra money during a forced hiatus from the military due to financial cuts.¹²¹ Again, these findings demonstrate the importance of reciprocal, trust-based relationships in the local functioning and structure of ASM production and labour networks. As it has been since the early 1900s, Tarkwa has remained a key node in the ASM network of gold supply from Ghana's Western Region.

The references made to 'sponsors' in a number of the quotations shared and discussion presented thus far require further explanation. Many interviewees hinted that the Belgium Market, and Tarkwa town and its environs, are now the locations of complex networks founded on trust-based relationships, built around informal financing and/or sponsorship. In both locations, many tributers and small-scale gold

¹¹⁷ Interview 12th June 2016, employee at a gold buying shop.

¹¹⁸ Interview, 8th June 2015, *galamsey* labourer in Tarkwa from Bolgatanga.

¹¹⁹ *Frafra* is the language of the *Frafra* people of Northern Ghana and Southern Burkina Faso.

¹²⁰ Interview, 25th May 2015, *galamsey* labourer in Tarkwa from Burkina Faso.

¹²¹ Informal discussion at hotel in Tarkwa, May 2015.

miners now sell a sizeable percentage of their diamonds and gold to sponsors, debtors, chiefs and land owners, all of whom reside in, or have links to, the towns and surrounding communities. The financial flows of sponsorship are essential in shaping the networks of the local semi-formalised markets. These findings are also testament to the true 'horizontalness' which now prevails at the grassroots levels of Ghana's ASM supply chains. In GPN language, these complex sponsorship arrangements have had the effect of 'embedding' tributers and small-scale gold miners in the nodes of the supply chain which the Belgium Market and Tarkwa town traverses. This became clear during interviews with buyers in both locations, especially those who are higher in the chain of supply, and who sell to foreign buyers/agents and sponsor smaller bush buyers/agents. One local diamond dealer who resides in Akwatia had built up a relationship over many years with a licensed Indian buyer in Accra, which he credits as positioning him to borrow considerable sums of money. The initial loan is deducted from the value of the diamonds purchased by the sponsor when the dealer returns to Accra every couple of weeks:

Every time I send diamonds to him [my sponsor at PMMC] ... at times he says '*Nana*, are you short of money?'. If I say 'yes' then he will give me something ... You see, maybe I will credit some from the customers, you see, then the money will be more than what he will buy from me ok, the ten thousand dollars maybe I will be buying the diamond for two weeks Two weeks when I buy the diamonds [and the money has] finish. I send back to him. He buy from me. Then the ten thousand dollars, when he finish buying he will deduct the money from it. Deduct his money and give my money back. If I say 'eh, me, ok, I need another ten thousand ... [he will give it to me]'¹²²

In Tarkwa, an interview with the owner of a large and well-equipped gold buying shop located in a mining community outside of town, explained how he regularly travelled to Tarkwa to sell to the same Indian buyer as he received a good price. The owner also explained how he sponsors both miners and bush agents to bring gold to him. In both cases, these arrangements were facilitated through mutual cooperation and benefit to the actors involved. They show business-like, trust-based relationships being mutually built-up over extensive periods of time:

Well we buy it from the *Chang-Fa* and the *galamsey* ... *galamsey* guys. Outsiders [from the community the shop is located in] come from the small towns like 'Asaman' and the like, others come from there, and its environs. When you bring the gold we look at the weight of the gold and its carats and then we give it a price. Those people [bush agents] okay ... you need to sponsor them so they bring the gold to you. Okay ... some people bring some ... the older people [bigger buyers] are made to send theirs but the little ones are made to bring theirs. I beg, we don't have anyone person ... we will call you, if your price is good we give it to you. [But] we have a few [regular] people at times we give [sell] them gold. For him [Indian buyer in town] we don't take anything

¹²² Interview, local diamond dealer, Akwatia, 26th November 2015.

[any sponsorship]. We've been work[ing] together with him so he has become our customer. We sponsor some people, mining and buyers, about 10 [people].¹²³

The significant amounts of money and considerable number of people being 'sponsored' by different actors in the network demonstrates not only the high-level of trust but also illustrates the extent of the layering and range of levels throughout the network where sponsoring takes place. These relationships are also key to the creation, capture, and enhancement of value and expressions of power which will be more deeply explored in the subsequent section.

5.3.3.3 Development of semi-formal trading networks

The third and final key development that has shaped the contemporary networks of ASM production at each locale has been the move made by government to legalise the semi-informal trading activities at the lowest rungs of the supply chains. In another De Soto-like move, though one which also speaks to the government's propensity for rent-seeking behaviour described in Chapter 4, policymakers issued buying licences in order to curb smuggling to neighbouring countries such as Togo. At the same time, and in line with the GPN framework, this development ensured that the government was able to capture more value from the country's mineral resources. It accomplished this by first 'legitimising' the activities of the diamond dealers trading in Akwatia, by calling on PMMC to award licences to this group in exchange for a nominal fee (GHS 5), a move which has stimulated additional economic activity in the Belgium Market. It simultaneously issued a second tier of licence, renewable annually for a fee of GHS 200, which permits a holder to sell diamonds purchased from local dealers to any of the licensed exporters based at 'Diamond House' in Accra (Hilson and Clifford, 2010; PMMC, 2016).

This has also been the case in Tarkwa, where local buyers must obtain a licence, renewable annually, from PMMC to purchase gold. The foreign gold buyers are also licensed through a second-tier category awarded on application in Accra, and up until 2016, this licence enabled companies to export gold without having to go through PMMC. In reality, however, and as one official reported very clearly in an interview, at the local level, the need to have a buying licence is rarely enforced due the very obvious lack of resources on hand and sheer number of buying shops which proliferate throughout the town and further afield:

It is an offence to buy gold without your licence. But nobody goes after them until they get a problem. We don't have the ... look at the offices around here. If I have to go out every day and I can't do it on my own. Unless I go with police and all those things. Eh! So, we don't have the people to, and the personnel to go round.¹²⁴

¹²³ Interview, 22nd July 2015, gold buying shop near Tarkwa.

¹²⁴ Interview, 15th June 2015, local government official, Tarkwa.

At the time of this research, a local buying licence was reported to cost GHS 300. But in what can only be described as another rent-seeking strategy, the fee was increased to GHS 1,800. Not surprisingly, much like the rise in the small-scale gold mining licence fee, few people had been to renew their buying licence:

And this year [2015], because of the way things are, not so many people have come for the renewal. So, what we have is because we've given licences this year, and other problem [laughs disbelievingly] then, all of a sudden, they will increase the licence price to a very big amount!⁴⁹

This government official appeared very understanding of the challenges and realities facing local buyers. The official also had an in-depth knowledge of how the sponsoring arrangements formed at the local level meant it was virtually impossible for the players comprising the current state buying model to compete with private gold buyers. At the time of interview, no gold had been bought locally by the government for eight months:

We [local government] don't have control over those big ones [foreign buyers]. They have their, how they send their gold whatever place they want. So, we don't have anything to do with them. And even those small-scale miners they don't come here. We don't have any control over them. What we do is [we] also in the buying business. So, what is happening here is, eh, it's very difficult for [us]. So, because if you go to town you will see the number of buying shops that is there. Nobody is regulating them. They just do it and they are on their own. Anybody who comes with a price high, they just sell it. There is a lot of gold in town but since February we've been sitting here we haven't send any gram to Accra. So here, right now the buying business is very, very difficult for us. Most of the small-scale miners they are sponsored by those buying in town ... we strictly buy at the Bank of Ghana exchange rate. But some [private buyers] they can take their dollars somewhere and the get to the high exchange rate. So, they are able to give them a high price than [here]. And that is basically the problem. They deal with that rate [internet]. But here we have to call Accra. They will give us the exchange rate for the gold and usually its far lesser than what is being offered in there [privately].⁴⁹

In summary, while having the effect of reducing the loss of precious minerals via smuggling, at the same time, the local buying licences have also made it more challenging for the state to capture value through local purchases of gold and diamonds. On a more positive note, by semi-formalising the buying structures, the government has helped to build trust and fortify relations among the many actors now found in the Belgium Market and Tarkwa's railway area (Table 5.6). This, in turn, has also provided a platform that has stimulated a host of additional – largely undocumented – 'horizontal' transactions at the very base of these diamond and gold supply chains. These dealings are responsible for the vertical 'progression' of the precious minerals. The following excerpts from two interviews in Akwatia capture this succinctly, providing a flavour of the types of transactions which take place in the Belgium Market:

Sometimes too the 'road pickers' when they find a big diamond, they sometimes think that those who are close to them cannot buy [bush buyers] so they have to just bring it down to the house [i.e. the town/Belgium Market] to sell it. Because they think they can get better price in the house than in the bush since it's a big diamond and with high quality.... They sometimes ask... 'oh, today I couldn't go to the road so just give me one cedi, give me two cedis Yeah, you have to give them, otherwise if he find diamond he will never sell it to you. He will tell you 'oh, this guy is very wicked guy, so he won't'.¹²⁵

[It] pass[es] about six or seven people hands. It can come to you straight, it will pass two, three to four hands [before it comes to the Belgium Market].¹²⁶

Similarly, and a true testament to the horizontal nature of transactions at the lowest level, in Tarkwa and surrounding communities, there are also many bush agents who travel to mine sites in more remote areas buying up gold to bring into town. As is the case with diamonds, the gold may pass through many hands before leaving the local communities. Much of this has to do with how gold is processed differently to diamonds, as well as the greater numbers of people its activities support, and relatedly, its more expansive labour and production networks. As is typical of the geology in Tarkwa, once the gold has been retrieved from the hard rock ore by crushing and grinding it into a fine dust, it is then put through a sluice, and the remaining sediment trapped is panned with mercury to bind the gold together. It is then refined in the 'kitchens' found at mine sites as well as round the back of one of the many smaller buying shops both in the 'bush' and in town. Here, this gold amalgam¹²⁷ is burned in the open air, usually with borax, to remove the mercury and other impurities and smelt the ore together. This produces a 'match' or 'blade'¹²⁸ which can then be traded. Usually, the higher up the supply chain the better the purity of the gold due to the methods, knowledge, and technology used. However, as noted previously, even in the bush purities of over 95 per cent (23 carat) can be found. In this way, the gold aggregates together along the supply chain before eventually reaching buying shops in Accra. In one example, a group of three labourers who were processing their gold explained that rather than travel the short and relatively inexpensive distance (30 minutes by road) into Tarkwa where they may receive a better price, they would rather sell locally. The reason, they explained, was that they receive immediate payment and that their fellow community members benefit mutually:

¹²⁵ Interview, local diamond dealer, Akwatia, 26th November 2015. 'Road pickers' are individuals who walk around, with their heads positioned downward, 'looking' for rough stones along the dirt tracks of the Akwatia concession that have fallen off trucks loaded with diamondiferous ore or which have been washed out following heavy rains.

¹²⁶ Interview, local diamond dealer, Akwatia, 26th November 2015.

¹²⁷ An amalgam is an alloy of mercury with another metal, in this case gold. The mercury sticks to the small gold particles bringing them together easily in a small ball when panning the final sediment.

¹²⁸ The common measurement in gold trading is a so-called pound. This is an old Ghanaian measurement of 0.8g (0.775g) which was equivalent to the weight of an old British pound coin. For smaller quantities, razor blades and the heads matchsticks are used on weighing scales/by site. The conversions are as follows: 1 pound (0.8g) = 10 'blades' = 100 'matches' (Fold et al., 2013).

We sell it here. Ah! We will not take it to Tarkwa kraaa! We will give it to our own brothers. Yeah. For them to also have money. Then on Mondays they will also go and sell it at ... ermm Tarkwa! Mmm. They have agents there; Tarkwa.¹²⁹

In a related example, a 23-year old bush agent explained that having been taught by his 'boss' and worked in a gold buying shop for a number of years, he is now trusted and sponsored by the same person to travel alone to communities and purchase gold independently. He buys direct from miners, refines and aggregates the gold further, and always sells to his sponsor due the mutual relationship formed over many years.¹³⁰ Trust based relationships are therefore clearly in operation at all levels in the supply chain. Having been partially formalised through the licensing of diamond and gold buyers, the government has helped spur an array of multi-layered and multi-directional lattices of socio-economic activity which help support the livelihoods of many thousands of people in each locale, and has embedded this vast array of actors deeply into the semi-formal economy.

5.3.3 Summary

In summary, and in line with the original framework, Ghana's small-scale gold and diamond mining supply chains do indeed revolve around a number of key 'firms'. But not in the same way that conventional GPN analyses project: specifically, as a *dominant* centrepiece that makes business-related decisions that spawn and galvanise local networks, and which trigger a clustering of local industries. In the case of Akwatia, while the contemporary alluvial diamond mining economy has emerged on the back of the previous large-scale firm, Ghana Consolidated Diamonds, and that of its successor Great Consolidated Diamonds Ghana Ltd., its continued existence is owed to the struggles of managers to keep its company solvent and deliver on promises made at the time the Tributer System was launched. In the case of Tarkwa, developing in tandem with the dawn of Ghana's industrial gold mining sector, the largely informal ASM activities are owed very much to the failure of large-scale mining to deliver jobs and engender development in the host community. In both cases, the dearth of state support and lack of a clear policy agenda and vision for the sector over the years has resulted in an array of non-state actors filling the gap. This has, in turn, allowed trust-based reciprocal relationships to flourish and deeply-embedded the sector into semi-informal spaces. Together, it is these developments that have ultimately shaped the present network structure and functioning found in each locale today. Understanding these events, it is argued here, is vital to developing better formalisation and certification initiatives. It is against the background of this network embeddedness that *power* and *value* are now explored.

¹²⁹ Interview, 20th July 2015, group of gold miners in small village outside of Tarkwa.

¹³⁰ Interview, 20th July 2015, bush buyer outside of Tarkwa.

Table 5.6 Local level actors in the Akwatia and Tarkwa diamond and gold production networks

Akwatia	Tarkwa
Licensed Buying Company	Licensed Buying Company
A company licensed by PMMC to purchase and export rough diamonds from Ghana. Presently, there are eleven companies located in designated offices in Diamond House, Accra (PMMC); the majority are foreign owned and operated. Licence application forms cost USD 1,200 to process, and the licence is USD 18,000; renewed annually for USD 12,000. Diamonds are purchased from local buyers (also licensed by PMMC) through bank-to-bank payments, and are stored in the PMMC vault daily. On request of the company, PMMC processes export at a fee of 2.3 per cent per parcel. Companies must buy from all local diamond buyers, though, reportedly, companies may act as sponsors pre-financing local buyers to ensure a supply of the diamonds needed. The finance is deducted from the final payment to the local buyer.	A company licensed by PMMC to purchase and export gold. There are only a few companies that export gold directly. The companies should repatriate any earnings into bank accounts with the Bank of Ghana. This was done to ensure more value is held in the country. However, in reality, it was found not to be the case and a policy investigation alleged that millions of dollars were being lost in capital flight.
Sponsor	Agent
An informal lender providing finance to actors at all levels in the supply chain. In Akwatia, sponsors finance tributer licence holders, entering various agreements usually involving payment in diamonds bought from the tributer at a below market rate. Sponsoring at the local level also occurs between sponsors, buyers, and dealers as well as the provision of 'chop' money to individuals such as 'road pickers' and labourers so that they will sell their diamonds back to them in the future.	Agents operate at a range of levels in the gold production network. Their main role is aggregate gold to order for buyers and larger agents further up the chain. The term may often be used interchangeably. Generally, an agent is working on behalf of or to sell to someone else.
Tributer	Licensed miner (concession owner)
Licensed directly by GCD to mine a demarcated plot of land on the concession. Tributers must meet various conditions and join the Tributer Miners Association before being issued with an ID card. The licence is purchased directly from GCD. Tributers usually enter partnerships with sponsors to finance their operations, and in return sell a proportion of diamonds mined at pre-agreed rate per carat.	The person who is the legal holder of the concession and licence as given to them by the Ministry of Lands and Natural Resources. To obtain an ASM licence the person must be at least 18 years of age, be a citizen of Ghana, and pay the requisite fees following the 14-step process outlined in Figure 4.2. As a first step, applicants must inquire at the ir local Minerals Commission office. It is estimated that 70 per cent of those working in ASM in Ghana do not have a licence.
Licensed buyer	Licensed buyer
A buyer licensed by PMMC to purchase diamonds in Ghana only. All buyers must be Ghanaian citizens. There are two levels of buyer licence: 1) allows buyers to trade in diamonds at the local level and establish a local buying office in Belgian Market, and; 2) allows buyers to sell diamonds to licensed buying companies in Diamond House, Accra. These buyers may be sponsored and also sponsor other actors.	A buyer licensed by PMMC at the local level to buy and sell gold. These are private buyers often with shops from where they buy gold and may also refine and smelt it in makeshift 'kitchens' round the back. There are many gold buying shops clustered around the railway line in the centre of Tarkwa. In reality, very few buyers at the local level appear to be in possession of a licence. There are many overlaps with the role of 'informal gold buy/agent' below.
Informal diamond buyer/dealer	Informal gold buyer/ agent
Diamond buyers and dealers operating informally in Akwatia, surrounding communities, and at mine sites. The trading activities of this group of unlicensed buyers and dealers are where the majority of horizontal sales and changing of hands occurs. Each has their own strategy depending on their agency and finances at their disposal. Some act as 'bush buyers' travelling to mine sites daily before return to Belgian Market each morning to trade, others stay in Akwatia town but do not have a formal office in Belgian Market, and many are also know to sponsor small amounts of 'chop' money to secure they can purchase diamonds at favourable rates. Virtually anyone in Akwatia buying and selling diamonds without a PMMC licence may be considered to fall into this category.	This category covers the majority of gold buyers found in the locality of Tarkwa and elsewhere. Many fulfil the roles of buyer and agents simultaneously, sponsoring people directly engaged in ASM, as well as as smaller agents and buyers to travel to areas and purchase gold on their behalf.
ASM Labourer / operator	Labourer
Employed by tributers to work at their concessions. Undertake the physical work at mine sites in three-week cycles (figure 3). Often receive 'chop' money to enable them to work over the three weeks while the gravels are being processed. They have limited, if any, health and safety equipment, may rent equipment daily, and are highly mobile; able to move between mine sites at the end of each cycle.	Labourers work in groups of 5–7 mining underground shafts on <i>galamsey</i> or licensed concessions. At most sites, a sharing system is in operation where labourers will receive a portion of the ore as payment in three week cycles. Labourers will often require a sponsor who will cover food and other expenses while they wait till the end of the three weeks and in return receive some of the ore mined. Labourers also work crushing rock and processing ore at sites where these 'facilities' and organisational arrangements exists.

Unlicensed artisanal miner	Unlicensed miner
Unlicensed miners organised independently or in small 'gangs' (one to three) that mine in the rivers and near tributer concessions.	Due to the geology requiring underground mining to be undertaken in larger groups of people and requiring the technology to either dig a shaft or excavate an old 'hole', the need for ventilation, electricity and lighting, it is often not possible for small groups to operate. However, in parts of the country with some alluvial gold panning is possible.
Road Picker	-
Individuals who walk around looking down at the dirt tracks that dissect the GCD concession in the hope to find rough stones that have fallen off trucks loaded with diamondiferous ore or that have been washed out after heavy rains.	No equivalent or near equivalent was observed.
Equipment renter	Ancillary activities
Rent head pans, sieves (jigs), spades and other equipment to labourers at some mine sites in return for a portion (usually 1 bucket) of diamondiferous concentrate. All equipment renters are women who work in groups of five to eight and rent to the same labourers each day.	A range of mine site activities are undertaken, such as taxi driving, cooking, and selling wares. Particular to the site visited, women and men were paid GHS 5–10 per 50 kg bag of ore to carry up the hill and out of the mine to be taken away by the different parties for processing.

Sources: PMMC (2016); GCDL (2011; 2016); Various Interviews (2014–2015). Note: There are not always distinct boundaries between some of these ASM stakeholders. Many people in Akwatia and Tarkwa shift between or undertake a number of these roles and livelihood strategies at the same time.

5.4 Empowerment (power) and value

Both *power* and *value* are examined together here because in ASM activities they cannot be separated. This resonates powerfully with Henderson et al. (2002, p. 450), who argue that 'the source of power within GPNs and the ways in which it is exercised is decisive for value enhancement and capture and thus for the prospects of development and prosperity'. As with embeddedness, however, the power dynamics that have surfaced and the value created in Ghana's small-scale mining economy are to be found in the semi-informal space. Once again, this has been courtesy of the government failing to provide adequate support and address key barriers to formalisation, which, as a result, has led to a range of local level actors and 'firms' stepping in to fill the vacuum left in its place. As will be further illustrated, it has been the governance structure in place for ASM and the influence of, and inputs from, PMMC, the Ministry of Lands and Natural Resources, and the chieftaincy institution, and in Akwatia, Ghana Consolidated Diamond's (and its successor's) Tributer System, that have truly shaped power dynamics and value in the sector. This final part of the chapter focuses in even further on the micro-level to examine the workings of power and value, and to map the fine details of production and labour activities at mine sites. Again, it is this resolution, it is argued, that government, policymakers and champions of ethical mineral certification initiatives are lacking but will need if they are to design more effective support programmes that are able to reach the scores of people deeply embedded in the informal economy, and which are better connected to the realities on the ground.

In Akwatia, as of November 2015, there were 240 tributers registered with the firm, Great Consolidated Diamonds Ghana Ltd., but due to a shortage of investment, only 10–20 were actively working their concessions at the time. As explained, through issuing individual licences under the Tributer System, Great Consolidated Diamonds Ghana Ltd. (and Ghana Consolidated Diamonds before it) has, at least on paper, some power over the ASM activities on the Akwatia concession, and ensures some level of accountability through its scheme of mandatory payments. But despite this framework and tributer licences being relatively affordable and quick to obtain in comparison with the 14-step small-scale gold

licensing process outlined in Chapter 4, a dearth of state-led support services and the absence of a conducive policy framework capable of facilitating access to development finance, means that it is ultimately the series of informal sponsors and financiers who determine the agency of operators. As such, they also hold power at the lower rungs of the supply chain. One tributer explained in an interview that it is not uncommon to have several sponsors in a chain:

If you were born in the locality [Akwatia] ... by all means you will have a friend, but if you are stranger it will be difficult for you unless you have a friend who can link you to this business ... we have the local sponsorship, we have the, I can say national, if you go to Accra you will have national sponsorship, and then we have international I can say the [maximum] is about five [people in the chain of sponsorship] I have a friend in Accra, he also has a white man friend, he's international business, he says he's going to contact his boss from Dubai. And Dubai too has a person at India or any other country, yeah so from India or from UK, from anywhere.¹³¹

Unlike diamonds, almost all of which originate from ASM activities in Akwatia, with gold, it is not possible to determine how much originates from activities in Tarkwa and surrounding communities nor the precise number of people involved in extraction. However, according to data obtained directly from the Minerals Commission district centre in Tarkwa, 10,567 ounces of gold were produced by licensed small-scale miners in 2012, comprising a labour force of 1,290 registered mines, and over 200 separate licensed mines (MinCom, 2015). The actual figures are, however, likely to be even higher. Thus, in keeping with the town's historical significance as a major gold producer (Dickson, 1969), Tarkwa's ASM activities, inhabitants and surrounding communities are a key source of gold in the country. It is embedded at the base of the global market for gold and inextricably linked to the vagaries of international gold prices.

The informal agreements and local-level dynamics of sponsorship outlined in the previous section, in turn, determine *value*, dictating whose hands diamonds and gold pass through in the various nodes and levels of the production network. In the original GPN framework, a firm is seen to *create*, *enhance* and *capture* value (Henderson et al., 2002). The Tributer System is certainly an example of a firm *creating* value through an economic rent. Similarly, at some sites in Tarkwa, the 'owner' of the pit mine shaft (i.e., the individual who originally sunk it) may not work it themselves and instead will rent it to gangs of labourers in return for a fee. But other forms of value also apply to activities in Akwatia and Tarkwa, which, very importantly, have contributed to the 'horizontalness' of nodes. Notably, artisanal and small-scale miners in both towns reportedly create value through informally sub-letting or 'parcelling out' their plots to smaller groups of miners; organising the labour structures and payment arrangements at their site in certain ways; and investing in particular technologies, such as crushing and washing machines. As illustrated through many of the quotations in the previous section, they capture value through informal sponsorship and buying agreements. For example, as one tributer explained in an interview, there has

¹³¹ Interview, 20th November 2015, Akwatia.

been a shift from a 'sharing' system to one where people pay their labourers a wage in order to enhance their ability to capture value:

At time[s] maybe some [tributers] ... create a portion to every worker and if you get the portion then the gravels outside will be divided into three, then the worker will take one part and then take away, and then you the owner take the two. But here, no, everything, wash everything, I buy [all the diamonds] and pay you I have acquired this experience [strategy] for a long time, I've been working for about 22 years, so I been studying when you do this and you get this and you do. I balance things and see where I make money and where I make these things. That's why.¹³²

From the detailed interview feedback, these informal 'value enhancing' arrangements are commonplace across both Akwatia and Tarkwa. For example, in another very informative discussion, one gold buyer explained, much like any other 'firm', how he had to work hard to attract and maintain his customers. The buyer uses sponsorship to give him the *competitive advantage* over rivals as well as gifts in order to market his business and help establish 'bonds' with his clients, and invests time in contacting them to maintain these relationships. These highly innovative value enhancement strategies speak not only to the high degree of competition among gold buyers in Tarkwa but, again, reinforces the important role of mutual beneficial, trust-based relationships to the functioning of ASM production:

There are certain customers we sponsor at times hence, we tend to give the gold to them strictly and no one else. We give them the price. Because there are other shops around, there tend to be some competition. And the more gold you buy, the more profit you make hence you always need to get a source for your delivery. For example, when you help your buyer/ miner with say a machine when he needs one, he will definitely sell his gold to just you because you helped him mine for the gold. But in a case when you are not able to, they would rather sell it to those who helped him when he needed a machine. Therefore, in order not to lose a customer, I'll support him financially so he sells to me in the end. Definitely, yes! We give them tips, sometimes in the form of souvenirs. For instance, as the Christmas season is approaching, we will make them t-shirts or polo shirts and other souvenirs such as rice for instance to tighten the bond between us and let them know how much we care about them even outside business grounds. You have to constantly get in touch with them. Also, you can pass by the site sometimes and find out from them how work's going.¹³³

Further reinforcing assertions made by Odera (2013) and others (e.g. Phillips, 2011; Murphy, 2012; Fold et al., 2013), the synergies that have developed between the informal and formal sectors seem to have positively affected value in the former. Consider, for example, the case of one local buyer based in the Belgium Market. The buyer stated, in an interview, that he borrows anywhere from USD 10,000 to USD 30,000, five or six times annually, from his Indian sponsor at Diamond House in Accra. This, he explained, was made possible by the trust built with the Indian sponsor over many years. He indicated that this

¹³² Interview, 5th August 2014, tributer at mine site in Akwatia.

¹³³ Interview, 9th June 2015, gold buying shop in Tarkwa

steady inflow of funds enables him to sponsor 20–30 additional local buyers in Akwatia, which puts him in a position to bring a combined 400–500 carats of diamonds to his sponsor monthly:

At times me too, I consider some people and give them some money to buy, so they go to the villages and buy and bring it to me. So some I give them 500 dollars It ranges from 200 to 2,000 [US dollars] ... by five days they will bring me the diamond and I will deduct my money.... I buy from them ... now ... 110 to 115 [cedis per carat, and sell for] 120. At times too, I buy from them for 120 to 125 [cedis per carat]. At times too I buy more than that, depending on the quality.¹³⁴

If these informal financial arrangements were not in place at all levels of Ghana's diamond and gold supply chains, entire nodes of production and most of the mining activities found in and around Akwatia and Tarkwa today would likely collapse. Indeed, as captured in Chapter 4 the current ban on ASM activities throughout Ghana, which took effect in April 2017, has been utterly disastrous for the inhabitants of local communities, who rely on the sector for their livelihoods. An in-depth interview with a tributer and his sponsor (they claimed to have known one another for over 20 years) at a newly-demarcated plot, shed light on the high start-up costs for tributers. It was explained that investment costs of as much as USD 60,000 are required over a three-month period.¹³⁵ The hefty sums involved suggest that there are hidden networks of sponsorship in the lower rungs of the supply chain, and that long-established trust-based relationships are responsible for mobilising significant quantities of money upfront:

Oh, we invest It's 'costive', very, very 'costive', because you will pay, errm, rent excavator eight hours you will pay [GHS] 1,700 for eight hours ... then buy the diesel 840 Ghana cedis for eight hours. Then operator, operator the machine eight hours he will get the *chop* one as 150 Ghana cedis.¹³⁶

In Tarkwa, one sponsor of an underground *galamsey* mine reportedly pays out GHS 50,000 (approximately USD 13,000 in July 2015) upfront every three weeks. This covers the costs associated with running and maintaining the diesel generator used to provide power to the whole site 24 hours a day as well as travel and daily living for its mechanic. In return, he was 'collecting' around 400 bags (each weighing approximately 50 kg) of hard rock ore.¹³⁷ Further innovative examples of value creation and capture are demonstrated through the raft of ancillary activities undertaken at and around mine sites (Table 5.6). In Akwatia, each day women travel to mine sites to rent equipment such as pans, drums, and sieves to male labourers in return for a bucket of black diamondiferous sand that has already been jigged once and which they take home to wash again and retrieve the smallest stones. And, in various communities around Tarkwa, processing sites have been set up where miners are charged GHS 30 to

¹³⁴ Interview, 26th November 2015, local diamond dealer Akwatia.

¹³⁵ To ensure the sponsor maintains cash flow, the owner of the excavator is paid upfront every 10 days using monies obtained from diamond sales.

¹³⁶ Interview, 25th November 2015, tributer in Akwatia.

¹³⁷ Field notes entry 20th July 2015 – see Appendix 7.1

grind and mill each sack of ore via static banks of *Chang-Fa* machines located in purpose-built barns that also have sluicing and washing facilities. A secondary market also now reportedly exists for the tailings which are bought by individuals sometimes referred to as *sankofa*¹³⁸ with significant capital and technical expertise and leached in cyanide heaps to retrieve the remaining gold.¹³⁹ These, however, are not the only costs involved; nor is it the only way that those working in the sector and surrounding service industries make their livings and create, enhance and capture value (see Table 5.6).

Although every ASM site has its own sponsor and has a unique organisational structure, one of the more popular arrangements among those interviewed, and indeed common across all operations, is what is referred to locally as ‘sharing’. The origins of this approach fit with the customary land tenure arrangement known as *abusa* which in Akan areas of Ghana has shaped socio-economic production for generations. Typically found in agriculture, *abusa* is a tenure or share-cropping system for dividing output (or income) derived from the land into thirds between landowner, management, and labour (Robertson, 1982; Taylor, 2006). It has influenced the development of the mining sector in Ghana (e.g. Nyame and Blocher, 2010; Kidido et al., 2015) since the dawn of the country’s industrial gold mining sector. For example, and as a slight departure, one of the more successful concessions during the 1890s belonged to ‘Swanzy Mines’ located eight km north of Tarkwa at Abosso. Here, Dickson (1969, p. 184) explains, ‘instead of paying a fixed daily wage, as was done everywhere else, the company leased the shafts to its workmen who received one-third of the output as their payment’, which was done in order to incentivise the workforce because the primitive equipment installed by the company made labour ‘all the more necessary’. The success of this form of ‘payment’ can thus be attributed to the fact that it, perhaps unbeknown to the managers, fit with local customs and relationships. Importantly, the detailed mapping exercise here demonstrates that the system still plays a crucial role in the labour and production arrangements for sharing the proceeds of ASM activities today. Understanding this is essential to designing any formalisation or certification initiative.

For those who are a part of an *abusa*-type arrangement, once diamondiferous or gold-bearing ore has been exposed/removed, it is divided, usually into three, with one portion going to the site owner/tributer, one to the sponsor, and one to the labourers. The local chiefs and land owner/farmer may also receive a portion or are paid ‘compensation’ as per any original agreement for mining to be allowed to occur on their land. In the case of the former, tributers receive a pile of washed gravels while small-scale gold miners working the underground hard-rock pit mines in Tarkwa receive a bag of rocks. They then take these to crush, grind, wash and mix the resulting sediment with mercury to recover the gold. In each place, and as was observed elsewhere in the country, mining is undertaken in three-week cycles, which has important effects on how people are paid. A closer examination of the dynamics of two ‘sharing’ arrangements in each case study location captures the essence of the ‘horizontalness’ of the nodes which Akwatia and Tarkwa traverse. It also provides insight into the multiple forms *power* and *value* can take.

¹³⁸ Meaning ‘go back and get it’ in *Twi*.

¹³⁹ Interview, 20th July 2015, Tarkwa mine and visit to processing site.

5.4.1 Mapping mine site production and labour network activities

An innumerable number of both licensed and unlicensed operations were visited in each case study area throughout the research. While drawing on the knowledge, experience, and understanding gained throughout all interviews of the local functioning of ASM networks, the final section of this chapter focuses in on the experiences of impoverished artisanal and small-scale miners at two mine sites in particular. This is done in order to narrow in on and illustrate the functioning in as greater detail as possible and demonstrate the sheer complexity and multi-layered lattice of socio-economic activity at play. Each in-depth description is accompanied by a detailed diagram that succinctly captures a general depiction of the types of organisational structures, trust-based transactions, and opportunities for value capture, and the hierarchical structures of power that help shape and form the social production networks found in ASM activities.

5.4.1.1 Akwatia

The 'sharing' / *abusa* site regularly visited (see Figure 5.7) is a 2.5-acre plot that was purchased for GHS 5,000 and employs 47 labourers, three security guards (two for the night and one for the day) and six supervisors. As is the case with all tributer plots in Akwatia, labourers are organised in 'gangs' of three to six people (usually men), who, over a three-week cycle, wash the gravel uncovered by an excavator using repurposed barrel drums with holes drilled into a removable lid that separates the larger stones from the sand. The resulting diamondiferous 'black sand' is then carried in head pans and organised into piles, each divided into three for the above-mentioned parties. The gang will then work in knee-deep pools of water and support one or two 'jiggymen', who use a 60 x 30 cm wooden box ('jig') with a fine metal mesh in the bottom to sift through the sand and find the diamonds. The entire process is overseen by the supervisors, who ensure that all of the diamonds are captured. Having 'jigged' the two piles of 'office sand' by the end of third week, each gang is accompanied by its supervisor to the office where all of the stones are weighed and bought by the tributer for approximately GHS 50 per carat. In an agreement brokered between the sponsor and the tributer, the latter then sells all diamonds to the former at a predetermined rate (approximately GHS 100 per carat). The sponsor then, reportedly, sells 5 per cent of the diamonds to Great Consolidated Diamonds Ghana Ltd. and the remainder in the Belgium Market or to a foreign buyer at PMMC, aiming to make a profit of GHS 10–20 per carat at a rate of 120 per carat. A 'good week' will yield 250 carats of diamonds.

Tributers are, in effect, *de facto* operations managers who oversee the entire mining operation throughout its lifecycle, and also pay the labourers the 'chop money'¹⁴⁰ of around GHS 5–10 daily needed to keep them going before the end of the three-week cycle when they receive payment. Having earned GHS 50 per carat for the office sand, the gangs are then free to sell whatever diamonds are won from their own 'third' of jigged sand. As they are one to two hours' walk from Belgium Market, many choose to sell to 'bush buyers', who travel to the mine site each day, usually buying at GHS 100 per carat before returning

¹⁴⁰ 'Chop' is pidgin English for 'eat' or 'to eat'.

to the Belgium Market the following morning to sell their diamonds, also aiming to earn 10–20 per cent profit, although as one explained in an interview, at times, they struggle to break even:

In the morning when I wake, I go to Belgium. When the day breaks and I'm through with my rounds, then I come over to this place [mine site]. What I get here is what I go round with the following day What I'm trying to say is you can buy diamonds here at 1 million [GHS 100] and then when go out there to sell you don't get your money back, the actual money, when you are not lucky.¹⁴¹

As this analysis illustrates quite clearly, in Akwatia's semi-formal space, these horizontal and often overlooked transactions which are fundamental to value-creation and which shape the power dynamics at the lowest rungs of Ghana's alluvial diamond mining sector, are catalysed by the actions of the tributer. There are many parallels with the dynamics of production, organisation, and labour in Tarkwa as well as key differences showing the extreme heterogeneity of ASM operations and need to understand operations in detail before intervening.

¹⁴¹ Interview, 23rd November 2011, bush buyer, Akwatia.

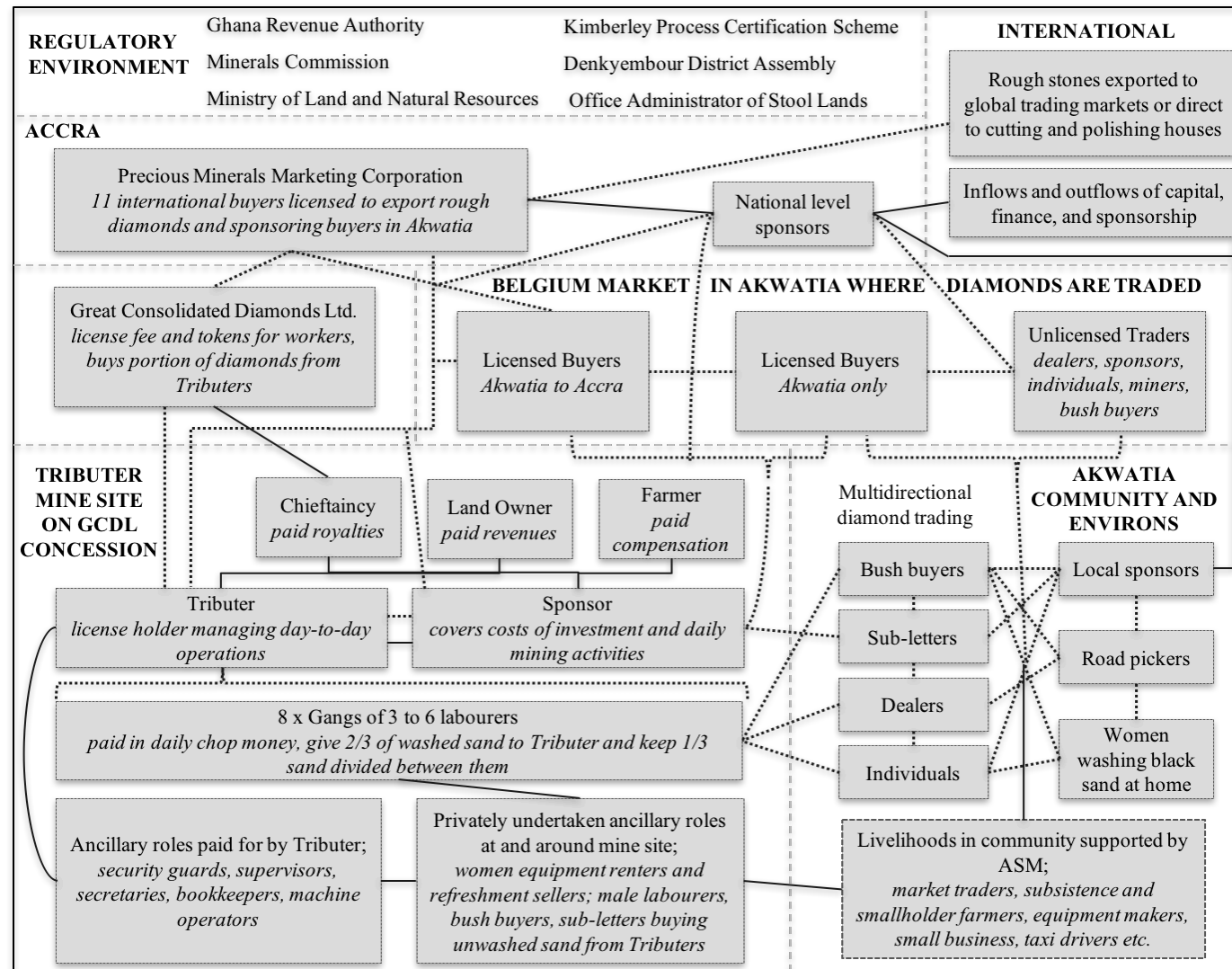
Figure 5.8 Akwatia node of the global diamond production network

Solid black lines indicate multidirectional flows of money or finance

Dotted black lines indicate multidirectional flows of diamonds

Light grey dashed lines delineate the network territory or regulatory environment

Boxes indicate a stakeholder, organisation, and roles relating to ASM



5.4.1.2 Tarkwa

Located outside of Tarkwa, the 6 km² site visited regularly was a semi-formal 'overspill' that adjoins a fenced-off licensed concession and is 'covered' under its umbrella licence. It has reportedly been in operation in some form since 1979, with the concession having been licensed since 1989. The exact numbers of people engaged at one time at the site are not known. However, the area consists of approximately 40 shafts each of which is roughly 1.5 m² wide, and, as is common at the majority of mine sites visited, a sharing or *abusa*-type system is in operation with each hole attended to by five to seven labourers known as 'loco boys'. There are therefore likely to be between 200 and 300 people at the site on any given day. The top of each hole is shaded-over by a simple wooden superstructure covered in tarpaulin and old sacks to provide shelter from the elements, and the shaft itself is reinforced by a 'cage' comprising horizontally lain wooden poles. The provision of the wood itself is also another ancillary role. The mine shaft leads down in a series of terraces and tunnels that are supported by wooden posts, and in total can be over 100 m underground. As is also found at most underground hard-rock ASM sites, the operations work in three-week cycles. During this time, the tunnels are first blasted, chiselled away manually with pick axes, or dug out with a pneumatic drill depending on the degree of sophistication and technology available. The new ore is then placed in old woven 50 kg plastic sacks (used previously for staples such as rice and sugar) and hauled to the surface where it is piled up and guarded until it is removed to be processed away from the site at the end of the three weeks on 'breaking day'. Miners work in shifts day and night. For new holes or changes in rock strata, labourers were observed to remove a sample of rock, pound it with a metal bar to a fine dust and then pan the sediment to ensure it contains gold, the remaining ore is then cleared out and either discarded or kept; demonstrating the rudimentary 'hit-and-miss' exploration techniques being employed. Though the exact set-up differs between each gang of labourers, one common arrangement at this particular site was as follows: 40 per cent goes to the owner of the generator which provides the electricity necessary for lighting and blown-air for ventilation; 15 percent is divided among the 'loco boys' who are the labourers that carry the ore to the surface; 15 per cent to the 'chisellers'; 15 per cent to the owner of the pit ('the one who digs the pit') or land owner; 15 per cent to the sponsor who pays for daily 'chop' money. Their shares are received in roughly 50 kg bags of unprocessed rock ore. Various rents in the form of rock ore are also paid to the local chiefs and the caretaker of the whole site.

The ore grade varies depending on what rock each pit is excavating. However, as a guide, at one hole it was reported that four to seven refined blades of around 23 carat gold can be retrieved for each 40–50 kg bag of ore with the labourer taking home two sacks every three weeks. With 10 blades being the equivalent of one pound (0.8 grams),¹⁴² and a blade reportedly selling at the time for GHS 65–100, this means that at the end of the mining cycle the labourer can possibly make anywhere between GHS 520 and 1,400 (USD 117–315). These figures were supported by the amounts labourers said they earned each month. However, this does not account for any sponsorship or outgoings the labourer might have.

¹⁴² The common measurement in gold trading is a so-called pound. This is an old Ghanaian measurement of 0.8g (0.775g) which was equivalent to the weight of an old British pound coin. For smaller quantities, razor blades and the heads matchsticks are used on weighing scales/by site. The conversions are as follows: 1 pound (0.8g) = 10 'blades' = 100 'matches' (Fold et al., 2013).

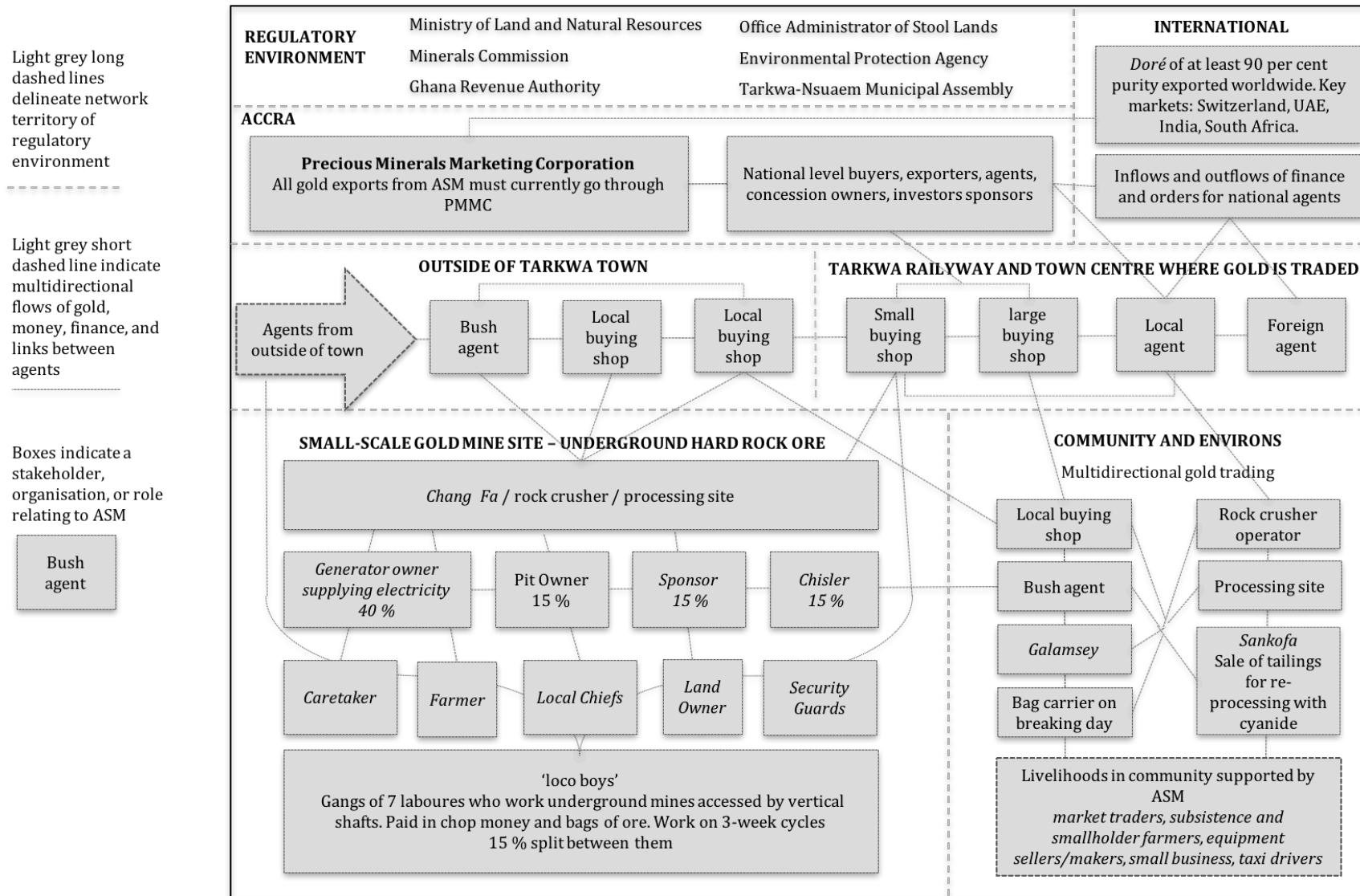
Furthermore, the exact amount is volatile due to the ore grade being recovered and the world gold price which is used to calculate the price. As there are no crushing facilities at this site, the miners remove their ore to process elsewhere. The majority take their ore to one of the nearby villages where there are wooden barns housing rows of crushing and milling machines powered by *Chang-Fa* motors and which cost GHS 30 per bag to use. At other mines these machines may be located on site. Once the sediment is milled, sluiced, and washed and mixed with mercury to extract the gold and form small balls of gold amalgam it is refined and sold to one of the many bush agents or shop owners dotted around the communities. The refining and selling may take place at the same time, or separately. The gold amalgam/blade may also be sold further afield depending on any pre-existing selling/buying relationships and any sponsorship arrangements the miner may have. If any of the actors have been sponsored with 'chop money' or provided with advances from agents etc. they will sell a set portion or all of the gold won back at the agreed price which also accounts for the initial outlay covered by the creditor. At these lowest rungs of the supply chain gold is changing hands many times over with each actor making marginal profits each time. For example, at one gold buying shop located near the mine, the owner reported that he was buying at GHS 840 per pound and selling for GHS 860, a profit of GHS 20. He sometimes makes as little as GHS 5 per pound. Every three to four days he can reportedly buy anywhere between 20–30 pounds (16–24 g) and in 'hard times' as little as seven or eight pounds (5.6–6.4 g).¹⁴³ He then travels to Tarkwa to sell his gold. This means in the course of a week (6 days) he may make as little as GHS 70 (roughly USD 15, or two dollars per day).

'Breaking day' at the site was most illuminating.¹⁴⁴ It demonstrated the sheer number of people who depend on the sector for their livelihood and the varied labour and ancillary roles they fulfil, such as women and men paid GHS 5–10 a time to carry the bags of ore 800 m up a muddy hill to the trucks parked at the entrance to the site. It also showed the complexity of the sponsorship arrangements and trust-based relationships, as well as the vast extent of the network with the local chiefs, 'big men' sponsors, and a Porsche 4x4 with Togo number plates present. The significant value being captured and amounts of material removed from the underground mines was also demonstrated with the bags being transported away totalling perhaps as much as 70 tonnes of gold bearing rock. This was all evidenced in detailed field notes (Appendix 7.1). The whole operation is overseen by the caretaker 'chief' who is appointed by the local chiefs and supported by four to six 'security guards' to ensure discipline prevails at the site, prevent any arguments escalating, and monitor activities 24 hours a day thus showing a relatively high degree of semi-formalised organisation and hierarchy at the ASM site. Like Akwatia, this detailed analysis quite clearly demonstrates the complexity of ASM site dynamics, the horizontal movement of gold through the network, and the often-overlooked transactions and important role of middlemen that are fundamental to value-creation and which shape the dynamics of power at the lowest rungs of Ghana's small-scale gold mining sector. The implications and insights generated from the side by side analyses will be critically reflected on and discussed in Chapter 6.

¹⁴³ Interview 22nd July 2015, gold buying shop outside Tarkwa.

¹⁴⁴ Field diary entry 20th July 2015 – see Appendix 7.1

Figure 5.9 Tarkwa node of the global gold production network



5.5 Conclusion

This chapter has shown how at the local level, artisanal and small-scale mining activities are an inherently socially networked phenomenon. It began by placing the case study locations of Akwatia and Tarkwa in the context of their respective production networks, and outlined the importance of the ASM activities in both places as key nodes of socio-economic activity embedded at the base of the global supply of minerals. Through the mapping of key nodes of international markets for gold and diamonds the chapter illustrated how ASM communities in Akwatia and Tarkwa, as elsewhere in sub-Saharan Africa, are intimately linked to and interlock with the vagaries of the global economic system and supply of minerals.

Moreover, the side-by-side analysis has helped to further reveal the similarities as well as the differences between the ASM activities in each case study locale. This has shown the extreme diversity and heterogeneity both within ASM mine sites as well as between them. It has also shown the importance of understanding how past socio-political events have influenced contemporary mineral governance and network structures, and the associated influence of 'lead firms'. Furthermore, the analyses have eloquently demonstrated how the constraining mineral governance framework, opportunity structure, and lack of state support that has materialised for the sector over the years that was mapped in Chapter 4, has led to the growth of the sector's informality and meant ASM agents in both locales have had to look elsewhere for much needed support.

By building on the mapping of the overarching mineral governance framework in Chapter 4, this chapter also represents the first attempt to apply the GPN framework, which, to date, has been used rather conservatively to map industries for which an abundance of information already exists, to conceptualise the complexities of ASM, to gather vital information about the sector, and to develop a more nuanced understanding of the interconnectedness of its key constituents. Obtaining this information, it has been shown, can be even more challenging in informal ASM settings or semi-informal setups such as the flourishing ASM economies now rooted in Akwatia and Tarkwa. It is, however, a first step toward bringing operators into the legal domain, where they can be regulated, monitored and supported more effectively. This inaugural analysis and mapping of the small-scale diamond and gold production strands as a part of the of their respective GPNs offers several very important insights which will be explored in greater depth and critically reflected on in Chapters 6 and 7.

Broadly, these insights relate to the ability of the adapted GPN to characterise and conceptually map the heterogeneity and activities of ASM operations. This, in turn, enables a greater understanding of the various processes, linkages and different roles that actors play, information of which, as argued repeatedly in this thesis, is an essential starting point when formalising ASM. Another key insight relates to the movement of gold and diamonds horizontally through these networks which may, perhaps, be better conceptualised diagonally in order to signify progression whilst at the same time projecting the movement as being incremental. This would align more with the way in which the analyses have captured

the detail of diamonds and gold as they move through networks, as well as the ways in which the boundaries in these semi-formal economies blurred more so than formal GPN networks. It would also account for the way in which different actors fulfil multiple roles and are active at various 'levels'. A final insight concerns the lack of analysis in the GPN literature on the informal economy. While this chapter only offers a glimpse of the complexities of semi-formal diamond and gold mining in Ghana, it has certainly uncovered and shared valuable information showing how the sector functions. In doing so, it has revisited the earlier conceptualisations of the GPN, which were developed with the assumption that production and networks revolve and develop around a 'firm'. This is certainly the case in both Akwatia and Tarkwa, but in ways that are different to how the role of lead firms have traditionally been defined. The analyses in Chapters 4 and 5 have therefore very clearly shown that once adapted and theoretically advanced for the purpose of mapping informal socio-economic activities such as ASM, the GPN framework can provide very rich insights with which to inform evidence based policymaking, and pro-poor formalisation and certification schemes that are better connected with informal spaces and the realities of ASM on the ground. Chapter 6 now examines these findings in greater detail.

Chapter 6 – Critical reflections on providing ‘transformational change’ and ‘empowerment’ for small-scale miners

6.1 Introduction

The semi-formal networks of labour and production found in the ASM are far-reaching, multi-layered, multi-directional and highly-complex. They are embedded within long histories of socio-political developments and interactions with ‘lead firms’ that continue to shape the network structures of production, labour, and activities found in ASM communities today. Moreover, they sit within contemporary mineral governance frameworks that prioritise the development of large-scale mining, and an opportunity structure that inhibits the empowerment and agency of impoverished ASM operators, therefore confining them to the shadow economy. The mapping exercise and analysis undertaken using the adapted GPN framework (Chapters 4 and 5) provided a glimpse of how heterogeneous ASM operations are in Ghana and sub-Saharan Africa more broadly, and identified and characterised the wide-range of actors engaged in operations as well as drew attention to the deeply embedded reciprocal trust-based relationships of mutual cooperation and benefit which underpin them. However, despite building a rich picture of the functioning of ASM at the local level, the complexity of these dynamics and fine details of the data captured (Objective 2) need to be synthesised and analysed further if they are to be used to inform the design of formalisation strategies and certification initiatives that are capable of reaching impoverished ASM operators who are deeply embedded in the informal economy, and which are more reflective of the realities on the ground. The analysis that follows weighs in, perhaps more so than the previous chapters, on the overarching research question of this thesis: How can ethical mineral certification initiatives and formalisation strategies provide genuine transformational change for artisanal and small-scale miners in sub-Saharan Africa?

This penultimate chapter builds on the analysis presented in the previous two chapters, as well as the literature review (Chapter 2), to critically reflect on, and further connect with, the gaps in knowledge and concerns raised with formalisation strategies and certification initiatives thus far. The main issues that have been highlighted in the analyses presented in Chapters 4 and 5 include a large-scale mining bias and propensity for rent-seeking instilled in policy and legislation; limited recognition in national policymaking circles of, and a disconnect from, the local level dynamics, and ASM’s poverty-driven nature, livelihoods dimension and functioning; a misdiagnosis and poor understanding of the role of certain actors that are crucial to the sector’s operation, such as so-called ‘unscrupulous’ middlemen; elite capture, specifically, the failure of support services and certification activities to connect with impoverished and informal operators; and the need for a more comprehensive picture and understanding of how the various strands and nodes of (ASM) networks fit together. The findings and discussions presented in the previous chapters are distilled and further explored here, in-depth, in order to begin to develop a set of

clear and pragmatic recommendations¹⁴⁵ for improving ASM formalisation strategies and ethical mineral certification initiatives in Ghana, and more broadly, sub-Saharan Africa. In doing so, this chapter, therefore, addresses in large part Objective 4 of this thesis ('Provide specific and generalisable policy recommendations for improving formalisation strategies and ethical mineral certification initiatives in Ghana, as well as the wider sub-Saharan Africa region, that are more in tune with the realities of ASM on the ground'). It also, in part, addresses Objective 3 of this thesis ('explore the potential and critically reflect on the utility of the adapted GPN framework for generating new insights and knowledge by applying it to map local ASM production networks') by reflecting on, and further demonstrating the utility of, the adapted GPN framework as a tool for mapping and providing a more nuanced understanding of the nexus of semi-formal activities such as those found in ASM.

It is first necessary to critically reflect upon the inaugural analyses of these two ASM production 'strands' of the GPN (for diamonds and gold) presented in Chapters 4 and 5. These offer a number of very important insights for formalisation and certification initiatives that are unpacked further here.

6.2 The importance of recognising *and* understanding the complexities

The first insight of critical importance concerns ASM itself, in particular, the heterogeneity of its workforce and activities, a phenomenon which Hilson and Potter (2005), Fisher (2007), Verbrugge (2015) and others have drawn attention to over the years. In order to make sense of the intricacies of the sector, and how, in sub-Saharan Africa, it is mostly found rooted in the informal economy, a radical re-conceptualisation of its organisation is needed. The GPN provides a much-needed lens for doing this: the literature on the subject offers valuable guidance theoretically and diagrammatically on how to map the many and varied complexities of an informal economy such as ASM. Understanding the various processes, linkages and different roles that actors play is an essential starting point when formalising ASM and developing complementary certification initiatives that are able to reach the individuals in the greatest need of support. This, it is argued, is perhaps the stand-out feature of the methodology and one that has generated far richer analytical insights than traditional value chain analysis. A number of examples drawn from the analyses contained in Chapters 4 and 5 illustrate this very clearly, and provide further insights into the functioning of ASM networks at the local level.

6.2.1 Providing graphical representations of the sector

On their own, the diagrams depicting the Akwatia and Tarkwa ASM production nodes (Figures 5.8 and 5.9), and accompanying text and analyses capture very clearly the sector's complexities and the relationships at play in two arms of the networks they are a part of. They are powerful graphical representations that draw attention to the multitude of actors involved, the interlinkages between them,

¹⁴⁵ This fits with the 'worldview' (philosophical perspective) of this thesis that was outlined in Chapter 3 and which has meant that from the outset, the research has embedded elements of pragmatism in order to place an emphasis on generating insights that have relevance to, and impacts on, society and is concerned with solutions to social issues (see Chapter 3, Section 3.2.2).

and the overlapping and varied functions of key agents. This in itself is a useful output of GPN analyses. If distilled and developed further into more appealing and eye-catching graphics, and accompanied by an easy-to-communicate narrative, these diagrams could serve the purpose of immediately conveying the complexity of the sector with which to better inform policymakers, lay persons, and the general public. This point may, at first, appear trivial. However, amid the ongoing ban on all ASM activities in Ghana that, as Chapter 4 outlined, has, in part, been fuelled by a general failure on the part of the government to fully appreciate the livelihoods dimension of the sector, and which has been buoyed by public support galvanised through the anti-*galamsey* rhetoric emanating from national media outlets, any clear graphical representation of the sector could, in the first instance, be a step towards shifting this toxic ‘debate’. The importance of challenging the negative and erroneous characterisations of the ASM sector, and offering an alternative evidence-based perspective that readily connects politicians and the wider public to the realities on the ground, is shown through the untold damage *Operation Vanguard* continues to have on the inhabitants of the rural communities who are dependent on the sector for their livelihoods. A recent follow-up interview with a diamond dealer in Akwatia confirmed the extent of the ban’s impact, and furthermore underscored the need for eye-catching graphics produced through GPN-type mapping:

Oh bad. It have really affected mining in communities because it is characterise by absence of formal job. The government order to halt the ... regulated activities of *galamsey* until further notice has also affected us you can not even mine diamond. Many people are disappointed in the government because this is not what he [President Nana Akufo-Addo and his New Patriotic Party] told then when he was given the platform to engaged vote from them. Most people had lost substantial sum of money. It has also course [caused] a lot of disorder in most family [sic].¹⁴⁶

However, while it is indeed important to highlight the pressing concern for entire ASM communities whose livelihoods are precariously hanging in the balance, academically, there are multiple theoretical insights that can be gleaned and used to inform the design of better policy, more effective formalisation strategies, and pro-poor ethical mineral schemes. It is the accompanying text and analyses of the overarching opportunity structure, and mapping of the micro-level social processes that are most useful when attempting to understand the sector through the lens of the adapted GPN framework.

6.2.2 Generating richer and more detailed theoretical insights

One of the most powerful illustrations of the deeper theoretical insights that the GPN framework is able to reveal is exemplified by the side-by-side analysis of the two strands of diamond and gold production in Chapter 5. First, it illustrates the breadth of the heterogeneity of, and differences between, the two: how contrasting organisational arrangements of profit sharing, labour structures and hierarchies, methods of extraction and processing, and financing can be found in localised areas, each of which is dependent on factors such as ownership, financial arrangements, education and technology transfer, and geology. To

¹⁴⁶ Communication, 13th March 2018, diamond dealer who resides in Akwatia.

share an example of this extreme heterogeneity, along the same stretch of river in Akwatia not more than 100 m apart two very different types of extraction and production were observed taking place. In the first instance, a group of three men were seen taking it in turns to swim out to the centre of the muddy, opaque and fast-flowing water body with a bucket, submerge and collect the diamondiferous ore in an area on the riverbed marked out by wooden sticks, before surfacing 10 m downstream. The gravel collected was then sieved through a repurposed oil drum to remove the large stones, and the resulting ore was 'jigged' for diamonds. In the second instance, 100 m upstream a gang of five men were operating a deafening floating dredger, consisting of a flat wooden platform powered by a *Chang-Fa* motor to suck up the gravels in search of alluvial gold. These scenes were captured and explained by the research assistant as well as the *galamsey* miners who were working the river bed during the two hours spent observing activities:

Research assistant:

The guy has gone down to bring gravel. Did you see he has gone down? You see the pegs they have made? You don't need to exceed. They have gravel within that area ... Yeah he's going down he's not coming up yet. So, this guy too is going to bring gravel. You look at him ... you see he has bring the gravels ... so he will go down right now ... Ah!! You see he has come up!

Galamsey:

Ours is different. These people work, if those people [on the dredger] bring it out then, they will work on it ... they are for the gravels.

Research assistant:

Chang-Fa is for the gold and they are for the diamond and they are getting the diamonds.

Galamsey:

Yeah, they are working for the gold ... this one is stone...It is stone and this one is gold.¹⁴⁷

The key characteristics that influence 'the ways of doing' at sites must therefore be taken into consideration and properly understood when designing and implementing initiatives if they are to have any chance of reaching and positively impacting the lives of impoverished ASM operators. As explained in Chapter 4 (Figure 4.3), by not fully taking stock of the physical and organisational dynamics and social processes at mine sites, and becoming preoccupied with the 'expressions' of informality, as opposed to its drivers, a range of stakeholders have missed out on having a lasting impact on the sector.

A second way in which the GPN framework helps to engender multiple theoretical insights is by revealing the similarities between each location analysed through the lenses of embeddedness, empowerment, and value. Despite being part of two very different GPNs, and set within a history of very different interactions

¹⁴⁷ Interview, 21st November 2015, *galamsey* Akwatia

with their respective 'lead firms', the operators in each case study locale face the same broad development challenges. Through a triangulation of these findings, these two discrete and distinct case studies alone capture the explanatory power of the adapted GPN framework (see Chapter 3, Section 3.3.1). Both locations are embedded within an opportunity structure and mineral governance framework that prioritise large-scale mining, have failed to empower artisanal and small-scale operators and enable them to readily access mineral rights, and, due to a lack of state support afforded to both unlicensed and licensed miners, have further entrenched and embedded individuals into a dynamic of semi-formal reciprocal trust-based relationships that are now essential to the functioning of ASM activities. The GPN framework has not only helped to focus attention on and recognise these challenges in the first instance but has also provided the conceptual and theoretical framework with which to 'deep dive' into the complex social processes operating in the background in order to fully analyse and understand them.

These richer analytical insights are especially important in light of repeated calls made by scholars for policy initiatives to recognise and account for the extreme heterogeneity of the ASM sector. Despite an array of in-depth case studies (e.g. Fisher, 2007; Hilson and Potter, 2005; Verbrugge, 2015; Ferring et al., 2016) which illustrate how dynamic and complex ASM can be, the sector's social processes and labour structures have continued to comprise a largely 'black-box' of socio-economic activity, particularly for policymakers. This is especially true at the lowest rungs of the supply chains; for the horizontal movement of diamonds and gold; and in cases of the multidirectional flows of power and value through the networks. When compared to findings from studies that have solely focused on linear value chains the analytical power of the adapted GPN framework for generating new knowledge, insights, and depth of understanding of the ASM sector is very obvious.

Though useful for their intended purpose, some of the value chain analyses of ASM activities have arrived at largely-superficial conclusions, and have generated findings which are markedly different to the in-depth data generated from the research undertaken for this thesis. The following example illustrates this very clearly. A UK AID-funded study (RCS Global, 2016) was undertaken by the 'responsible sourcing' specialist consultancy firm, RCS Global, on behalf of the UK-based NGO, the International Institute for Environment and Development (IIED). It examined government buying programmes and ASM value chains in five case study countries. For Ghana, the authors recognised, partly and somewhat superficially, the importance of trust between PMMC officials, buyers, and gold miners in Ghana. They also highlighted in the case of the Philippines how '[m]iddlemen were in turn credible to the ASGM [artisanal and small-scale gold mining] miners [sic], and a relationship of trust and sometimes dependency existed between them' (p. 17). However, while these findings tally with those reported in this thesis, several of their 14 'recommendations for national actors' advocate a very different approach to improving conditions in the ASM sector. The authors also arrive at a very different set of recommendations to those that are presented over the course of this chapter.

Most startling in this regard is recommendation eight: 'Cut out the middleman' (p. 34). This, the authors go on to argue, is necessary because despite assuming 'transport, refining and security costs...drawing on

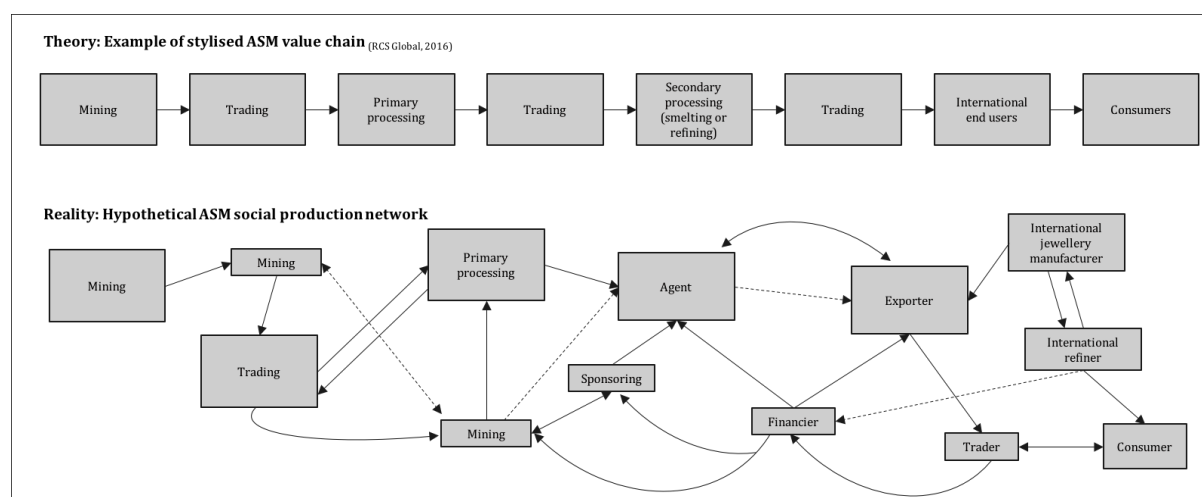
them entrenches their position and undermines the SGBP's [State Gold Buying Programme] position as a dominant buyer, able to capture a significant share of the market'. In turn, the authors argue that this leaves the state 'at the mercy of a network of middlemen who can choose to sell to other buyers'. They advocate for the value chain to be 'shortened' so that small-scale gold miners receive 'a better price for their production', so that the state can become 'a relevant and capable market participant' as a 'pre-condition not only for its effective implementation but also for the SGBP to reach its full range of objectives'. However, as is illustrated very clearly by the discussions and evidence presented in Chapters 4 and 5, this view is highly-problematic. It shows how using the *value chain* as the sole unit of analysis yields an underdeveloped and unrepresentative analysis of the functioning of ASM networks and the crucial role middlemen play in supporting activities in informal spaces. As an example, and to reinforce this point here; it completely ignores the important role played by the smaller, gold buying shops clustered around Tarkwa town, such as one where in an interview with an employee, it was explained that he has around five miners currently working for him and that 'each person can take about GHS 1,000 at least or even GHS 1,500 and more' in sponsorship.¹⁴⁸

Using linear chain-type analyses in studies on the ASM sector and informal economies has also resulted in a missed opportunity to develop richer insights of the realities on the ground, analysis that could help guide the state on how best it can support and derive benefit from the semi-formal trust-based, reciprocal relationships that it has, unwittingly, helped to entrench. The exact issues uncovered and what they mean for formalisation and certification initiatives will be returned to in the subsequent sections of this chapter. The crux of the argument here is, and revisiting the conceptual framework built in Chapter 2 (Section 2.3.5), that the mapping exercise presented in Chapters 4 and 5 has shown that value chain type analyses are incapable of unearthing completely the complex qualitative social processes of embeddedness and power that are vital to the functioning of ASM activities. This is because these analyses do away with the social and labour elements of production, which, as this thesis has argued throughout, is one of the defining characteristics of ASM. The analysis presented in Chapters 4 and 5 have, therefore, helped to more accurately reconceptualise the nexus of semi-formal ASM activities as *social networks of production* or as comprising a *social production network* (SPN).

As Figure 6.1 shows, much of this *obscurification* comes from the value chain methodology itself. This is due to the requirement of the researcher to 'make arbitrary decisions on what to map in charting a path through complex value chains' (Kaplinsky and Morris, 2002, p. 52). Indeed, while this process of interpretation and reduction still occurs in the GPN analysis, as without it the network would be too complex and would not be possible to generate useful findings, the power of the GPN, as demonstrated, is that it is able to reveal the complexity and heterogeneity in far greater detail and retain more of the 'reality'. The view here is that it is precisely this complexity that needs to first be recognised, and second, understood in order to develop more innovative ASM formalisation strategies and ethical mineral schemes. The adapted GPN framework is uniquely able to provide guidance on how to achieve this.

¹⁴⁸ Interview, 10th July 2015, Tarkwa gold buying shop.

Figure 6.1 Value chain versus production network mapping: Theory and reality



Source: developed from Kaplinsky and Morris (2002) and RCS Global (2016).

The GPN mapping exercise has revealed many hidden social processes that have hitherto gone largely unnoticed in policy, and which the academic literature is in need of more information on. Indeed, much of this information would likely be considered insignificant if the researcher were to chart ‘a path through complex value chains’ (Kaplinsky and Morris, 2002, p. 52) focussing solely on the flows of value, illicit finance, functional processes, and the movement of rough stones and unrefined gold (e.g. Levin, 2010; Maldar, 2011; Hunter and Smith, 2017). The adapted GPN lens is thus extremely useful for mapping the workings of the multidirectional lattices of informal ASM production in African settings such as Ghana, as well as for understanding the social processes behind it and associated complexities. This is the detail the designers of formalisation, certification and support-related initiatives need in order to reach needy operators in the informal ASM sector.

This section of the chapter has outlined the powerful way in which the adapted GPN framework can reveal the complexities of ASM production, and, crucially, enhance understanding of it (Objective 3). Building on ideas raised in Chapter 2 (Section 2.3.2), it has helped to produce an analysis rooted in the framework’s initial goal of improving the ‘human condition in [an] age of economic and geo-political turbulence’ (Henderson et al., 2002, p. 358). This is a feature of GPN studies that had been lost in recent years. The next section of the chapter examines more closely examines the insights that have been generated, and weighs in on what they mean for developing formalisation and certification initiatives that are better able to reach impoverished and informal small-scale miners and offer the transformational change they so desperately need.

6.3 ‘Invaluable’ middlemen¹⁴⁹

The conceivers of ethical mineral certification schemes have repeatedly singled out ‘unscrupulous’ middlemen as a major reason why scores of small-scale gold miners become trapped in cycles of poverty. As outlined in Chapters 4 and 5, in lieu of a lack of government support for *galamsey* as well as licensed operators, miners have been forced to look elsewhere for assistance; and a range of non-state actors have readily filled this vacuum. In search of the crucial support needed to nourish their economic activities, they have turned to an array of middlemen who provide invaluable supplies of finance, technologies, and services. The mapping exercise through the GPN lens has very clearly illustrated the complex trust-based relationships between these buyers, agents, and sponsors – the so-called ‘middlemen’ – who make up the networks of production at the lower rungs of the supply chains. It also outlined how without them the ASM activities that engage over one million people directly, and several million or more in the host of ancillary roles the sector supports in the country, would likely collapse. This section of the chapter ‘lifts the veil’ on the role of middlemen in ASM production in Ghana, and sub-Saharan Africa more broadly. It is one of the key findings of the thesis, and of great relevance to improving interventions and support initiatives for the sector.

To date, much like the inaccurate stereotypes of the *galamsey* ‘menace’ peddled by Ghana’s politicians, certification initiatives, and in particular those supplying the jewellery segment, such as Fairtrade Gold, and Fairmined Gold, have developed their markets off the back of evocative stories. The narratives shared have been of impoverished, vulnerable miners being exploited by ‘unscrupulous’ middlemen, coverage of which is likely to engage sympathetic consumers who have little knowledge of the situation on the ground. This has been at the heart of both Fairtrade Foundation’s and ARM’s manifesto from the beginning. Specifically, the view that because operators are ‘[e]xploited by some middle men, their access to markets is limited and they rarely receive a fair price for their product’ (Maldar, 2011, p. 3). More recently, Fairtrade Foundation’s website, which had previously only shown pictures and stories of its activities in Latin America, now proudly displays a new video of the ‘Fairtrade Gold Story’ (Fairtrade Foundation, 2017). The narrative links together drab images of the uncertified *Tiira Small-scale Miners Association* in Uganda working open rudimentary pits, and is accompanied by emotive and sombre piano music that is overlain with text such as ‘the reality is not so glamorous’. It then cuts to shots of the Fairtrade-certified *Macdesa Mine* in Peru (see Chapter 2, Table 2.6) where the miners are shown using much more technologically advanced equipment and processing techniques, and are kitted out in full safety gear. Here, the mine manager explains the benefits to health and safety, and improved efficiency and profits from working under the scheme. The four-minute promotional video is also spliced with interviews from UK jewellers extolling the benefits of ‘not only ... taking responsible choices about health and safety or child labour ... [but] ... actually putting money back into the community through ... [Fairtrade Gold] ... premiums’. It also contains footage of the General Secretary of the Kenyan

¹⁴⁹ Parts of the discussion here formed an earlier draft of: Hilson, G. and McQuilken, J. (2017) ‘Moving overseas? Critical reflections on the implementation of Latin American ethical gold schemes in sub-Saharan Africa’, in Deonandan, K., and Dougherty, M.L. (eds.), Chapter 10, *Mining in Latin America, Critical approaches to the new extraction*, London: EarthScan from Routledge.

MICODEPRO mining association, Dan Odida's visit to London including an interview in which he praises 'the UK community [for] embracing the fair trade gold in the market'; and a happy European couple reflecting on where the gold in their wedding bands originates, all of which is set to a more uplifting and positive piano soundtrack. The video ends with the message: 'Don't Feed Exploitation, Choose Fairtrade Gold'.

This is the type of imagery and language which officials at the Fairtrade Foundation, with their experiences in agriculture, are very familiar with. In fact, the belief that experiences in the developing world's smallholder industries are analogous with those of the small-scale mining sector were likely a main reason behind its decision to expand its portfolio to include gold in the first place. Officials have gone on record and in press releases claiming that 'They [miners] are consistently exploited by middle men, their access to markets is limited and they rarely receive a fair price for their gold' (Fairtrade Foundation, 2014). These claims have also come to dominate the rhetoric of ethical jewellers and are reinforced in the recently updated text on the organisation's Fairtrade Gold homepage that accompanies the video (Fairtrade Foundation, 2018c):

Small-scale miners are also exploited by traders because of their poverty, and the absence of regulation and legal protections. They rarely receive a fair price for their product, even when the world gold price rises, as they are usually offered below the market price. Because of this, these miners struggle to generate enough profit or attract the finance needed to invest in their operations or in safer, more efficient mining practices and technology.

However, as has been clearly shown through the GPN analyses the story is far more complex. The analyses have also demonstrated that some of the claims being made by these organisations on their websites and in their promotional material are, at best, simplistic, and at worse, bordering on misleading. As a number of scholars have also demonstrated in Ghana (Hilson and Pardie, 2006; Fold et al., 2013), a range of buyers, agents, and sponsors (collectively middlemen) provide support in the form of finance, daily 'chop' money, equipment, and processing, in exchange for diamonds and gold bought back for a 'discounted' price. Similar dynamics persist across sub-Saharan Africa, such as in Nigeria, where Goldman et al., (2014, p. 50) report that 'the majority of artisanal gold miners sell their gold to unlicensed buyers', middlemen whom 'have already loaned cash to them [the miners] for various financial needs', which enables them 'to set the price [at] which they will purchase the gold, which is often below market value, and which is in turn sold [on] to the buyers (sometimes known as – wholesalers)'. However, this miner-buyer relationship has largely been portrayed as parasitic, given the monopolistic and higher position within the chain of supply which the latter often find themselves. This raises two concerns, the significance of which become very clear through a GPN lens.

The first is the role of the middlemen in this context. Is the expectation that the arrival of substitute buying strategies, in the form of ethical mineral schemes that provide guaranteed, and potentially higher payments for gold, will lead to their immediate eradication? In sub-Saharan Africa, this is unlikely to

happen. As highlighted, some commentators have gone as far as advocating the removal of middlemen. This is something which the analysis presented in Chapters 4 and 5 has shown: that in countries such as Ghana, these actors are deeply *embedded* within, and essential to, the functioning of ASM in informal 'spaces'. Moreover, such a move, which may seem idealistic on paper, is perhaps not even desirable. It is only with an improved understanding of the entire market system, functioning of the sector and the circumstances miners face, information of which can be obtained through a GPN lens, that this becomes apparent. Each of these concerns are now discussed in turn.

The notion of 'exploitative' and 'unscrupulous' middlemen requires further explanation particularly in light of where activities take place: in informal 'spaces'. While the relationship between the buyers and miners populating these communities where these 'spaces' are found may appear parasitic, the reality is that, as noted, the former are providing crucial services – however 'unfair' the terms may appear to outside observers – to the latter which no other party seems willing to provide. The findings presented in Chapter 5 illustrate how, when the context is taken into account, the relationships formed in both Tarkwa and Akwatia should be seen to be characterised by reciprocity, trust and mutual cooperation and benefit. Specifically, these relationships have come about because of the sector's widespread informality, and the way in which the Government of Ghana has, inadvertently, acted to entrench them through semi-formalising key nodes of socio-economic trading activities and by licensing buyers, while simultaneously providing very little support (if any) to both *galamsey* or licensed miners. Officers at Solidaridad have, at least, recognised this to be the source of the problem, reporting that 'informality keeps artisanal miners in a vulnerable situation, often at the mercy of unscrupulous middlemen' (Solidaridad, 2014, p. 17). Similarly, as Chapter 2 (Section 2.2.2) highlighted, officials at the Fairtrade Foundation also seem to be aware that by 'introducing appropriate legislation that is tailored to the needs of artisanal and small-scale miners, and implementing public policy and programmes for ASM, they will no longer be forced to operate illegally' (Fairtrade Foundation, 2015, p. 17).

But at the same time, there seems to be little appreciation of the breadth and dynamics of this informality, its root causes and how to go about tackling it. Implementing a substitute buying service which offers 'fairer' prices, accessible only through compliance with stringent criteria, is simply not enough. The bonds that small-scale miners and bush buyers/agents have forged at the very lowest rungs of the network with those based higher up the supply chain, extend beyond financial drivers. For these actors, trust, reciprocity, kinship and mutual co-dependence have been shown to be very important, if not more significant, rationale behind their selection of their chosen partners (middlemen). This leads to the second concern: whether the approach being taken to remove middlemen from the value chain, which appears to have been brought about by pressure to ensure traceability (Hilson, 2014; Hilson and McQuilken, 2016), is the most effective way of positioning miners to capture more value and to engender transformational change in the first place.

The overarching message from the GPN analyses and discussions in Chapter 5, in contrast to the claims being made, is as follows: that small-scale miners are receiving very close to, and in some cases above,

market rates for diamonds and gold, and that the local level actors along the network of supply are only making a relatively small profit of several per cent each time precious minerals trade hands. This is also supported by a number of other studies undertaken in Ghana and elsewhere in the region (Fold et al., 2013; Kessler et al., 2015; Hunter and Smith, 2017). An interview with one of the 11 or so foreign diamond buyers who are based in PMMC's Accra offices revealed that they are very aware of how their firm interlocks with the local markets in this way. The foreign buyer spoken too explained that if he were to move to buying locally it would damage the networks of supply and small amounts of profits trading hands at lower levels and which thousands of people have come to rely on:

We buy the goods from the artisan miners so I would say, if you have seen Akwatia, let's say you have seen two hundred people selling. But those two hundred people don't come to market here, they have their internal chain like dealers like him [dealer currently at the office to sell diamonds] because he is you know higher in the chain. He is at a different level. So, he will collect something from this, something from this, something then he will collect all and [send] to us ... We work under the licence of PMMC. We can't go to Akwatia and buy, we are not allowed. Yes, because otherwise, you know, we'll break those two hundred people chain. If we sit there [Akwatia] that means we can take the margins.¹⁵⁰

In their haste to portray and *fetishize* small-scale miners as vulnerable, exploited individuals in desperate need of Western consumers to 'choose Fair Trade gold', scholars have overlooked the resilience, agency, and empowerment of these operators (as well as other impoverished diamond buyers and gold agents at the lowest levels of the networks). Every single miner and local buyer/agent interviewed in both Akwatia and Tarkwa, like those above them in the chain, use their mobile phone or had access to the internet with which to check the real-time world market price of their precious minerals being traded. This was conveyed very clearly during interviews, as were details of the minimal profits being made (estimated at six per cent profit before any costs are deducted):

I do that by checking the market price ... I check from the internet ... [by] phone ... The prices on the internet helps a lot in determining how to sell at what price ... It [profit] ranges from GHS 10 to GHS 20 for a pound [0.8 g] ... If you get a good gold with a density of 23 carats or more you earn more money.¹⁵¹

I check from the internet. We just search for gold price on the internet. We don't know how to do the calculation but we get it from our agents. I have quite a number of agents. We have more than one but we mostly sell it to the one with a good price. The prices vary, sometimes within the split of a second, so there's no fix price for it. As of today, it's 11 – five (GHS 150). That's what we are buying at. We sell at GHC 11, six hundred (GHS 160) [per pound / 0.8 g].^{152,153}

¹⁵⁰ Interview, 12th February 2015, Foreign Diamond Buyer at PMMC Accra.

¹⁵¹ Interview, 10th June 2015, Gold agent Tarkwa.

¹⁵² Interview, 9th June 2015, Gold agent Tarkwa.

The certification organisations appear to be very outdated in their views of, and disconnected from, rural life in sub-Saharan Africa, and especially mining communities, where smartphones are now ubiquitous. Again, perhaps this is due to the romanticised view of smallholder agriculture and rural cooperatives that have been the mainstay of these organisation's work and 'success' of their certification schemes to date. This, in turn, is due to their ability to capture the Western public's imagination through narratives of impoverishment, helplessness, and salvation. The power of internet connectivity is surmised in Narayan's (2002, p.73) sourcebook on empowerment and poverty reduction, produced on behalf of the World Bank. It demonstrates that despite this understanding having been around for over 15 years in development and policymaking circles, it has not filtered through to NGOs that are reliant on outdated views of society in sub-Saharan Africa to develop the market for their gold:

Information and communications technology (ICT) is creating economic, social, and political empowerment opportunities for poor people in the developing world. Direct and independent access to information about prices and exchange rates can transform the relationship between poor producers and middlemen.

Furthermore, in a market in which, as shown through the interviews with officials in Chapter 5 (Section 5.3.3.3), it is no longer possible for PMMC to compete with private buyers at the local level, a radical 're-think' of the company's objectives and purpose with regard to ASM is clearly needed. The next section of the chapter examines this point in greater detail in relation to how the state can capture and enhance value from its ASM sector, while at the same time taking a more supportive and proactive approach that may aid state-led formalisation efforts for activities found in key nodes of the sector's networks.

6.4 Creating, enhancing and capturing value

How can the Government of Ghana, impoverished artisanal and small-scale miners, local diamond dealers and gold agents, capture more of the value from their natural resources? To date, and as outlined, rent-seeking of licensed activities combined with heavy handed and ineffective sweeps of unlicensed mine sites have been the main conduits through which the government has attempted to manage the country's ASM sector. The third key insight the GPN framework has revealed is that by committing to fully understand the networks of diamond and gold production and the social processes that underlie them, it is possible to gain a deeper appreciation for how value may be created, enhanced, and captured by the various actors along the chain. Through the application of the adapted GPN framework, ASM activities have been shown to be underpinned by complex trust-based, reciprocal networks of sponsorship that determine who can purchase diamonds and gold from both licensed and unlicensed activities. This is in contrast to value chain analyses which largely focus on the flow of value from one discrete point to the next, the exchange and processing that takes place at specific key nodes where the product originates and travels to, and how much money each agent makes along the way.

¹⁵³ Note the differences in the currency codes: GHC = 'old Ghana cedis' and GHS = 'new Ghana cedis'. This change occurred in 2007 when the government simply removed '0,000' zeros to make currency calculations easier.

6.4.1 Understanding the functioning of local level diamond and gold markets

The need to conceptualise and understand fully the dynamics of the market and networks of buying, sponsorship and extraction was demonstrated very clearly following the recent arrival of a new gold refiner, one of only three (though the other two are largely defunct – see Chapter 5, Section 5.2.2) now servicing Ghana’s gold market. In late-2015 Ghana’s Minister for Lands and Natural Resources announced plans to tap into the global refining industry and capture and enhance more value through *upgrading* (Chapter 2, Section 2.3.5). This was to be achieved by licensing the Egyptian company *Euroget Group* to build and operate a gold refinery in Kotoka International Airport, Accra (Aidoo, 2015). Operating under the subsidiary *Gold Coast Refinery Ltd.*,¹⁵⁴ the plant was inaugurated in November 2016 and aimed to provide a supply of refined gold (of 99.99 and 99.999 per cent purity) for jewellery making and bullion trading in the country and wider sub-region. It also has facilities for assaying, storage, and custodian services, capacity building and training, and a site for jewellers along with a permanent exhibition space. However, to date, the world-class refinery is woefully under-utilised. Despite installed capacity at the plant making it Africa’s second largest gold refinery capable of producing 360 tonnes annually, and supposedly creating 300 direct jobs, at present it is operating at just five per cent capacity. This is due to challenges of sourcing gold from ASM that can be assured to have originated only from licensed activities in order to meet international trading requirements. Had the Government of Ghana not acted so hastily to attract foreign investment, yet another sign of its rent-seeking behaviour and short-term thinking, and, had it managed to gain a better grasp of the reality and functioning of gold supply chains at the local level (as articulated in Chapters 4 and 5), then perhaps it would not find itself and partner Euroget in the embarrassing situation it is in now (Gold Coast Refinery, 2018). The failure of the government to deliver on its promises could also negatively impact the industry and business relationships over the long term by discouraging future investment and diminishing investor confidence in government institutions.

However, this oversight, combined with PMMC’s inability to compete with private licensed buyers in ASM communities, has revealed a potential way forward. According to reports that emerged in the media following the ban on all ASM activities (Chapter 4, Table 4.5), PMMC’s export licence was revoked by the Bank of Ghana in September 2017. At the time of writing, the ban on ASM was still in effect, and no gold was being exported through PMMC. The decision to revoke PMMC’s licence was due to the alleged contravention of *The Foreign Exchange Act, 2006* and a 2016 Notice (Bank of Ghana, 2016), which requires that all merchandise exporters repatriate their proceeds to a Ghanaian bank account in order to help keep foreign exchange earnings within the country’s economic system. Following an investigation into the alleged facilitation of capital flight and collusion between a number of foreign gold exporting companies and company officials, it was found that PMMC was unable to fully account for the proceeds of USD 2.3 billion in gold exports in 2016 (Asiedu, 2017; Adogla-Bessa, 2017; CitiBusiness, 2017). While it is not clear when ASM activities will be allowed to resume and, relatedly, when PMMC will be allowed to export gold again, reports from online media state that the company will re-issue all diamond and gold

¹⁵⁴ Gold Coast Refinery is a private company of which 80 per cent is owned by the other Euroget Group subsidiaries (Bafis S.A; Euroget De-Invest S.S) as well as the group’s Chairman and his family (‘the Deraz Family of Egypt’), with the remaining 20 per cent owned by Ghanaian entrepreneurs and investors (Euroget Group, 2018; Gold Coast Refinery, 2018).

buying licences with enhanced security features in early 2018 to help prevent fraud, suggesting the company looks set to continue to play a key role (CitiFM, 2017c).

With the Government of Ghana (through the central bank) having already moved to enforce that all exports of gold and diamonds from private licensed buying companies be routed through PMMC, and announced its efforts to close potential channels of corruption, it may be an opportune time to reinforce the company's mandate as the sole diamond and gold exporter, and charge a levy in the process. Taxing (proportionally) companies to export diamonds and gold in this way has two distinct advantages. First, it focuses largely on the foreign diamond and gold exporting companies at the top of the national supply chain. These are the organisations that are already empowered with significant financial capabilities and agency, and which buy diamonds and gold 'to order' for their overseas clients and through networks of foreign capital (Figure 5.8 and 5.9). Notably, as Chapter 5 explained, there were only a handful of companies that had been exporting diamonds and gold directly, meaning that this proposed 'change' is already largely in place. By focussing on where PMMC's strengths lie, the Ministry of Lands and Natural Resources, in tandem with a mobilised Minerals Commission and other agencies responsible for managing Ghana's mineral resource wealth, could work to harness the power of the 'invaluable' middlemen through taxing the 'top' and using these funds to provide support and enforce 'light-touch' regulation at the base of the supply network. Indeed, as explained in Chapter 2, the experiences of the Fairtrade Foundation in Kenya have already shown the difficulties faced when trying to replace the invaluable services provided by middlemen, and relatedly, the great importance that they play in ASM:

The project has so far not been able to develop an adequate response to the need for pre-financing for the ASMOs (removing a function currently provided by local gold buyers). [Kessler et al., 2015, p. iv].

6.4.2 A draft blueprint for harnessing the power of the middlemen

What can be done to harness the power of local middlemen? As has been illustrated, 'middlemen' actually comprise a range of actors such as diamond buyers, gold agents, and sponsors who operate in the lower, community level of the social production networks in ASM and provide invaluable sources of finance and other support services to small-scale miners. In reference to the literature review in Chapter 2, it is argued that these agents should instead be conceptualised as opportunistic and necessity-driven entrepreneurs (Hilson and Hilson, 2015; Hilson and McQuilken, 2016; Hilson 2017a; 2017b) who have filled vital roles in the absence of wider institutional support and affordable services on offer by the private sector.

To elaborate on the draft blueprint introduced at the end of Section 6.4.1: A portion of the revenue generated through exports processed by PMMC could be earmarked to support miners, as well as the local small-scale mining social networks of production they are part of. With a monopoly on the exports from ASM at the top of the national supply network in Accra, there is no need for PMMC to compete with

the multitude of local level buyers and agents (middlemen) at the community level, who, as outlined, operate in mutual beneficial cycles of reciprocity, providing finance and credit where no other financial institution will. Instead, with the funds generated through this taxation, the existing local PMMC offices that are already embedded at the base of the ASM networks could work in partnership with the Minerals Commission to further formalise and support the activities of local buyers/agents through a 'light touch' licensing approach. To overcome the issues of accessibility and bureaucracy with regard to becoming registered operators that were examined in Chapter 4, the licences could be tiered according to the 'level' and buying/lending power of the agent, and in a progressive manner representing the quality of the services on offer against a set of criteria of best practice. This would provide a level of accreditation along the chain of supply. Specifically, if properly resourced, the activities of PMMC, in tandem with other local agencies, could focus on the issuing, and monitoring and enforcement of a very low-cost and easy-to-acquire licence. Activities could also include supporting agents to improve and formalise their business practices, adhere to minimum and 'ethical' standards of buying and lending practices as per the best practice criteria, and provide education and extension services to ensure the refining and smelting of gold at the local level is being undertaken safely and without releasing chemicals such as mercury into the natural environment.

The analyses have already shown how by moving to semi-formalise the key nodes of ASM activity within the Belgium Market and railway station area, in Akwatia and Tarkwa respectively, the licences issued have embedded and catalysed a wealth of socio-economic activity, and curtailed the smuggling of diamonds and gold to neighbouring countries. Indeed, this approach of supporting pre-existing semi-formalised nodes of socio-economy activity, and particularly the local level middlemen, would also align with the Government of Ghana's own aspirations for its ASM sector and help mobilise some of the objectives outlined in the 2014 *Minerals and Mining Policy of Ghana* (see Chapter 4 Table 4.5). These government objectives include recognising that the sector presents opportunities to 'develop entrepreneurship' and the need for the state to provide support in the form of 'tailored assistance in basic business skills' as well as 'simplified procedures for applying for licences' (Government of Ghana, 2014, p. 35).

It is therefore rational to continue to build on this foundation of existing middlemen and a policy of supporting 'entrepreneurship' which the activities of these necessity-driven and opportunistic local level traders certainly align with. Furthermore, the approach being advocated here would also redress the power imbalance between local and foreign buyers. This could be achieved by further formalising the activities of the former and thus providing them with legal protection and more bargaining power. It would also help to shift more of the value downstream to the impoverished miners and local buyers/agents who need it most. To ensure that the greater value captured by downstream local buyers would also be passed further down the chain to impoverished small-scale miners, certain measures would need to be implemented. One such measure could be that as a pre-condition for local buyers and agents to obtain a license and become 'accredited' they would need to offer a guaranteed minimum price relative to the world market. As has been shown, this is something that the majority of diamond and gold

traders already do, regardless of whether initial sponsorship has been bundled into the ‘buy back’ price or not. Like ethical mineral certification initiatives, the price for gold could be benchmarked as a percentage of the LBMA daily fix, and in the case for diamonds in accordance with international markets and classifications, again something that small-scale miners are already aware of and were found to be largely able to use. This approach would ensure that the more impoverished and marginalised actors in the lower levels of the supply network are able to receive a guaranteed ‘fair’ price – something that the officials of certification schemes have repeatedly suggest they do not – and would also mean that when there are inevitable fluctuations in the world prices of diamonds and gold, competition does not drive the price so low in local communities that their livelihoods become untenable.

This proposed blueprint, though in need of further development, would deliver at least three clear benefits. First, it would help to remove any residual ‘parasitic’ and ‘unscrupulous’ middlemen that may exist, and in particular the small number of foreign buying companies found locally and who, as was uncovered in Chapter 5, already find it a challenge to penetrate the lower rungs of the network. Second, these activities could also form part of a wider formalisation strategy for the sector, and help to catalyse improvements downstream for impoverished miners themselves. This is because it would empower impoverished small-scale miners with a regular, transparent, and guaranteed source of finance for their activities. In turn, this would increase their agency, and, would simply re-trace the existing, deeply embedded, trust-based relationships. Third, an initiative based on this draft blueprint would also align with regional governance initiatives for the sector such as the Africa Mining Vision, and global frameworks such as the Minamata Convention on Mercury which, as outlined (Chapter 4, Section 4.2.3.1), requires signatories, of which Ghana is one, to develop a National Action Plan for formalising ASM. In summary, rather trying to compete, retrace, curtail, and clamp down on *galamsey* operations and semi-formalised trading networks, policymakers could work to fortify, formalise, and improve the networks of supply. This is likely to be a far easier, proactive, and a potentially achievable approach given the deeply embedded nature of ASM activities shown through the GPN mapping in Chapters 4 and 5. By ensuring guaranteed prices, and combined as part of a wider holistic formalisation strategy, this approach could help communities, local buyers/agents, and government to capture more of the value from their mineral resources and formalise activities.

6.4.3 Realising value in-country

There is another key point of relevance here concerning the ways in which communities as well as countries in sub-Saharan Africa, such as Ghana, can realise more value from their ASM sectors, insights that the GPN framework has helped reveal. It is also a caution to national policymakers in the region to ensure that any move made towards fair trade type certified export models does not undermine the socio-economic development potential of the ASM sector and sovereignty of their natural resource wealth in the long run. The GPN analyses undertaken through Chapters 4 and 5, also help to add weight to the argument that the *current* fair trade certification models are, largely, a flawed agenda. This is because, it is argued, they are based on servicing a niche Western market for traceable jewellery products to middle-

class consumers who are able and willing to pay more, as opposed to a truly bottom-up development initiative which is able to empower ASM operators and transform the lives of impoverished communities by addressing the fundamental barriers to formalisation. This concern is, however, not new. As Chapter 2 highlighted, a number of scholars (Hilson, 2008; 2014; Childs, 2008; 2010; 2014; McQuilken, 2016; Hilson and McQuilken, 2016; Hilson et al., 2016; Fisher, 2018) have already raised grave concerns with regard to fair trade's propensity for elite capture and the hitherto misguided approach of focussing on the expressions of informality rather than the drivers. The research has reaffirmed these concerns. Relatedly, it has also helped to cast further light on, and advocate for, the *legalist* school of thought – removing bureaucratic hurdles and adjusting governance frameworks to readily transition miners into the formal economy – that is being developed in some of the more recent parts of ASM literature (Hilson et al., 2017). Prioritising the move of small-scale miners into the legal domain *is* at least one thing that the respective certification organisations have, as the excerpts in Section 6.3 show, very clearly, and correctly, understood about the sector. This begs the question, why are organisations such as the Fairtrade Foundation and ARM, as well as other donor and industry backed certification schemes, not doing more to address the barriers to formalisation that prevent ASM communities from capturing more value from their activities?

Many of the certification organisations have a vast resource base, global reach and highly professionalised networks (Chapter 2, Section 2.2.2), a testament to being able to bring their standards to fruition in the first place. It therefore seems inexplicable that, to date, those establishing partnerships with elite ASM cooperatives have shied away from engaging with the political processes, and the mineral governance frameworks and policies (opportunity structure). As examined in Chapter 4, these are the fundamental issues that continue to entrench the majority of miners in the informal economy in the first place. A better understanding of the diamond and gold ASM social production networks, through GPN type analyses, would undoubtedly reveal to these organisations the host of additional activities they could be undertaking, or at the very least, helping to catalyse. Referring back to the theoretical and conceptual framework built in Chapter 2 (Section 2.3.5) in which the various forms of *upgrading* – technological, institutional and market capabilities that allow an agent to improve their ability to create, enhance, and capture value – were summarised (Table 2.7), a number of potential avenues for intervention are now outlined that the GPN analyses brought to the fore.

One potential area for intervention, and which responds to the concerns raised in the literature review, is the direct export model that Fairtrade International, ARM and other certification initiatives utilise. As with the majority of products certified under fair trade and allied schemes (e.g. coffee, tea, and chocolate) most of the value is added once it leaves the country of production. The same is true for diamonds and certified gold, the latter of which is exported as unrefined *dóre*, and refined to the required purities of over 99.9 per cent in places such as the UK, France, Switzerland, and the United States (see ARM, 2018 for a list of Fairmined authorised suppliers). Similarly, the diamonds from Akwatia are also exported without any cutting or polishing to enhance their value. A more 'transformational' and 'empowering' approach, in keeping with the rhetoric of these organisations, would be to refine the gold and add value to diamonds in

the country they are mined as it would help to keep more of the value within the (country's) economic system. In Ghana, an approach such as this is certainly possible due to the presence of government-backed refining facilities such as the Gold Coast Refinery Ltd., and, PMMC's Diamond House offices in Accra where diamond and cutting facilities are in operation (Tetteh, 2012). For other countries where none or outdated infrastructure exists, the organisations could seek to examine ways to facilitate these kinds of opportunities and partnerships for investment in local development. This could then be leveraged as part of a holistic formalisation strategy for ASM in order to indirectly benefit those at the base of the sector's networks.

Not only is the gold exported under fair trade models unrefined, but it is also leaves the country of production without being fabricated into jewellery, another key value-adding activity. As elsewhere in the sub-Saharan Africa region, in Ghana there is a burgeoning, and largely understudied, number of local jewellery makers who, with additional support, could be helped to improve the quality of their work, provided with facilities, and given access to the ethical gold markets that UK and European independent high-street jewellers are currently supplying. In a study of the jewellery sector in and around Kumasi, Ghana's second city and capital of the historical Ashanti Kingdom, Fening (2015) identified 150 jewellers who serve the local markets with gold artefacts. These are often in the form of traditional *adinkra* symbols that convey various proverbs and hold specific meanings and could have significant appeal in international markets. Furthermore, the Accra offices of the PMMC and the new Gold Coast Refinery Ltd., both have jewellery workshops, and exhibition and sale rooms. An interview with an official at PMMC revealed very clearly just how keen the company is to add value to its diamond and gold industry in this way and help develop its nascent jewellery sector for both domestic and overseas markets:

If we had money? Well you know we are trying to develop the jewellery industry. And that involves money, equipment and then producing and then also having a market, you see the problem here, especially you have to get some, like a partnership. You have to push us out because I think the end point is the value addition.

With the wealth of resources at their disposal, and the clear willingness of certain technical officials in government to develop partnerships, the Fairtrade Foundation and ARM could work to link their networks of jewellers with those in Ghana, with a view toward developing knowledge and technology transfer partnerships, avenues for collaboration, and facilitating access to new international markets. Provided certain measures were put in place, keeping more value in-country would also filter down the chain of supply, and with a carefully-designed approach, could eventually help to begin to develop a domestic market for certified jewellery for the rising middle classes in Ghana.

Developing international and domestic markets for Ghana-made jewellery is not beyond the realms of possibility. For example, sales of Fairtrade-certified products have soared in recent years in emerging market economies such as Argentina, Brazil, the Philippines as well as in Kenya and South Africa (Hughes et al., 2015). In terms of domestic markets for certified goods in sub-Saharan Africa, Hughes et al., (2015)

explain how the 'Proudly South African' campaigning and labelling initiative that has been in existence since the late-1990s has galvanised a whole swathe of the population into buying home-made goods which are also certified to meet certain environmental and 'ethical' criteria. A similar approach could therefore be emulated in Ghana as part of a genuine government strategy to develop secondary gold markets in-country and across the region by promoting Ghana-made jewellery which could be marketed internationally as being from the original Gold Coast and Ashanti Kingdom. Furthermore, as Fening (2015, p. 61) outlines, the domestic market for such items has also grown in recent years:

A few years back jewellery [in Ghana] was used only on special occasions like festivals, weddings, engagements and other formal ceremonies and it was associated with the brides and married girls only. But nowadays it is worn casually as well as formally and everyone likes to wear beautiful and elegant jewellery items.

In addition to ways in which certification organisations could become involved at the national level, the GPN analyses have uncovered innumerable opportunities to support small-scale miners and their communities at the local level. These social 'upgrading' strategies could feature educational programmes to help truly empower communities and increase their own agency through workshops and training programmes, which inform individuals about their rights and entitlements, share details about the process of obtaining ASM licences, and encourage them to form associations, which is, coincidentally, a pre-requisite for (fair trade) certification. Additionally, skills training programmes could be developed to help overcome information asymmetries, improve access to markets, and help link the various strands of the networks together to further improve horizontal coordination and catalyse a sharing of expertise and knowledge across nodes. These socially-focused interventions are beneficial for two reasons: 1) they emulate much of the organisation's rhetoric around empowering local communities making them more easily workable; and 2) they contrast dramatically with the technical interventions put in place for the sector over the past four decades. As captured in Chapter 4, these largely failed as they did not consider the social process in ASM production networks

Should these types of direct activities not be considered viable, cannot be justified financially, or are outside the remit of mineral certification schemes, at the very least, there are a number of indirect measures that could be undertaken with minimal effort. First, and referring back to points made at the beginning of this chapter, certification initiatives seeking to be truly 'pro-poor' could spend more time better understanding gaps in government capacity as well as the more fundamental reasons that trap miners in poverty and the informal economy. This could be achieved through detailed analysis using the GPN framework. Second, with this greater perspective, and deeper understanding, the organisations could start to draw on the detail and information obtained to improve the accuracy of their marketing materials and utilising their extensive, global networks; communicate and draw greater attention to the real *underlying* barriers to formalisation; and not erroneously singling out 'unscrupulous middlemen' as the protagonist of the entire ASM sector's social and environmental 'ills.' This approach would also see the broad range of certification organisations operating under fair trade take a partial return back to the

original political movement in order to engage in the national level governance issues where, as Chapter 4 mapped, many of the barriers to formalisation originate. This is also the space that a number of commentators profiled in Chapter 2 suggest is where most of fair trade's power to engender transformational change exists (Fridell, 2004; Walton, 2010; Hudson et al., 2013; Childs, 2008; 2014).

Collectively, or taken individually, these types of activities, and others, could begin to have an impact on the lives of the most impoverished operators – as opposed to the elite groups of miners their standards have only been able to reach thus far. However, in the same way it has taken over 60 years since the original *Fair Trade Movement*¹⁵⁵ for agriculturally-based products to become a regular feature on supermarket shelves, to date, a considerable amount of work has had to be undertaken in order to develop the market and supply chains for ethically-certified precious minerals and jewellery. This need to ensure the sustainability of the market, which is largely based on the volatile shopping preferences of Western consumers, has therefore likely been prioritised over the more challenging and pressing issue of directly helping informal miners to gain a licence and subsequently addressing the negative health and environmental impacts of their operations. Paradoxically and ironically, it is also these 'expressions' of informality, and the associated narratives of vulnerability and exploitation, that certification organisations have been reliant on in order to market their products to 'conscientious consumers'.

The next, and final, section of this chapter explores the significant, and, given the current political climate, seemingly near-insurmountable gaps that remain between government, policy, and small-scale miners. As the discussion has shown, these fundamental barriers to formalisation need to be addressed before any certification initiative can possibly have widespread impact on the lives of those embedded at the base of mineral social production networks in sub-Saharan Africa. It is only once the foundational governance framework is in place for the sector that certification initiatives can move beyond helping elite groups of miners and have any chance of truly empowering and transforming the lives of the millions of impoverished and currently informal ASM operators across the developing world.

6.5 Reaching the informal economy

As a point of departure, the discussion now turns to consider how formalisation and ethical mineral schemes can connect with informal small-scale miners. As has been demonstrated throughout the thesis, for there to be any hope of transformational change and empowerment of communities, this segment, where the vast majority of ASM operations are confined in sub-Saharan Africa, must be reached. Based on the information captured and analyses undertaken in Chapters 4 and 5, as well as the preceding discussion in this chapter, there are very clear gaps in support for small-scale miners at all levels of the production network in Ghana and likely elsewhere in sub-Saharan Africa. The detail captured in this thesis adds to the wealth of case studies on ASM in Ghana, and more broadly sub-Saharan Africa, that reaffirm the need for mineral governance frameworks to first and foremost bring operators into the legal

¹⁵⁵ As outlined in Chapter 2, throughout this thesis *fair trade* is used to refer to the current umbrella global network, while, *Fair Trade* refers to the original political movement that existed in the 1960s.

domain, where they can then access support services to improve their activities. In order to achieve this, and address structural conditions that keep the majority of miners trapped in cycles of poverty and embedded in the shadow economy, these issues must be tackled head-on. But how can this process of formalisation be achieved, and how can government support services and certification initiatives for the sector reach the informal economy?

The mapping of the overarching mineral governance framework, through the adapted GPN lens, presented in Chapter 4, revealed the constraining regulatory environment that has helped to fuel the informality of ASM in Ghana. This was found to be because of the 'opportunity structure' preventing artisanal and small-scale miners from: readily gaining access to mineralised land versus powerful multinational mining companies; easily obtaining a licence to mine due to the cumbersome 14-step process, and; set against a backdrop of a demonising *anti-galamsey* rhetoric, a lack of much-needed support services to improve and mitigate the negative impacts of operations. All of these elements must be addressed if miners are to gain a foothold in the formal economy. While only holistic and sustained policy interventions can break the cycles of poverty that ASM communities are trapped in, the analysis exposed some significant regulatory and institutional gaps, power imbalances, and, the extent to which various actors within the social production network are empowered to effect change. These openings could also act as entry points through which government, NGOs, certification bodies and other organisations looking to formalise the sector and have a 'transformational development impact' can begin to reach those operators deeply embedded in the informal economy and in greatest need of support. This would also help the Government of Ghana implement its own policy initiatives, such as those enshrined in the most recent iteration of the Minerals and Mining Policy of Ghana: 'small-scale miners must be assisted in their efforts to operate in a technically, economically and environmentally sustainable manner' (Government of Ghana, 2014, p. 35), as well as regional frameworks such as the KPCS and AMV that were outlined in Chapter 4. A number of key interlinked factors that, if undertaken together, could help to reach the informal economy and broader policy objectives for the sector are briefly outlined here. These are distilled further in the next, and final, conclusions chapter (Chapter 7) and disaggregated by stakeholder in order to fully address Objective 4 and provide a set of specific policy recommendations for the ASM sector in Ghana and elsewhere in sub-Saharan Africa.

6.5.1 Land and licensing

The first is land and licensing. These two issues are taken together because while they are extremely complex topics, each deserving of in-depth discussion, as was illustrated in Chapter 4, they both stem from the legalist position that underpins the analysis presented in this thesis. As has been detailed and which the adapted GPN framework made even clearer, there is a significant power imbalance between small-scale miners and large-scale mining companies when it comes to access to land. This is evident in Ghana's mining legislation itself, as small-scale miners have been forced to compete with overseas capital. Relatedly, the difficulties with obtaining a licence have left miners without any legal protection or support

to make a claim. Both of these issues will need to be addressed if there is any chance of formalisation or certification initiatives to work.

6.5.2 Decentralisation of governance and provision of support services

The stakeholder mapping in Table 4.3 revealed how, while on paper, Ghana has a decentralised system of governance for its minerals sector, but in practice, the power is concentrated in the hands of the Ministry of Lands and Natural Resources (MLNR), and the Minister in charge who is appointed by the ruling party. The local offices of the Minerals Commission and PMMC have no decision-making power and as a result the licensing process has become overly-complicated and time-consuming. Furthermore, at the national level, the Minerals Commission also retains limited power, functioning as a technical agency for the MLNR. As a result, and as has been so dramatically demonstrated through the recent ban on ASM, the wider mineral policy for the sector can be easily hijacked for political means. Quite clearly, there is a need to develop a cross-party body that can spearhead the formalisation and development of bottom-up, community-level support initiatives for the ASM sector in line with evidence-based policy making. The level of detail and information required for this is certainly something which the adapted GPN framework developed over the course of this thesis could help to provide.

6.5.3 Empowerment of small-scale mining associations and improved dialogue

Finally, there is a very clear need to engage marginalised small-scale miners and the various actors in lower levels of the social production networks in policy debates, consultations, and decision-making processes for the sector. It is only through a complete and holistic lens and understanding of the networks and the various functions its agents fulfil that effective policy can be developed. Through the analysis in Chapter 4, GNASSM, the national membership body for licensed small-scale miners in the country, was found to have 'limited power to affect change'. This is despite the association holding regular meetings with the Minerals Commission, having their press releases picked up regularly in media outlets and, in the case of the rise in EPA environmental permit fees, effectively lobbying government to rescind on their decision. Furthermore, given that GNASSM is only open to licensed miners there are currently no formal channels through which *galamsey* operators can express their grievances and be engaged in policy formation. This gap in engagement with unlicensed miners will ultimately need to be bridged, as there is simply not enough capacity to continue the current heavy-handed approach, which like other operations to remove illegal miners that have gone before, will ultimately fail in its objectives. Small-scale miners must be empowered to effect real change in policy and brought more centrally into the conversation. This is certainly an area where 'pro-poor' mineral certification initiatives could help given their experience with supporting the development of cooperatives and associations in other sectors as a pre-requisite to becoming certified under their standards.

6.5.4 Can ethical mineral certification schemes deliver transformational change?

What are certification initiatives doing, if anything, to address these gaps? For the final part of the discussion in this chapter, it is prudent to critically reflect on the most recent ‘development’ in the fair trade mineral certification space. This is especially pertinent given the attendance that Chapter 3 of this thesis places on generating useful insights for policy and practice which may, in turn, help contribute in some small way (or provide a stepping stone towards) improving the position of impoverished small-scale miners.

Over the course of 2017, during the latter part of this research project, the NGO-turned-industry-organisation spearheading Fairmined Gold, ARM, collaborated with the Washington DC-headquartered consulting company RESOLVE and a panel of industry experts to develop the Code of Risk-mitigation for Artisanal and small-scale mining engaging in Formal Trade (CRAFT) (formerly *Market Entry Standard*). For 60 days between the 26th of February and April 2018, it was published online as part of a round of public consultation. The CRAFT document is described as ‘open source’ meaning that it ‘can be used by anyone in or working with the ASM gold supply chain to improve access to legal and reliable markets and support progressive improvement of environmental and social conditions in ASM’. There is no ownership of its use and it can be implemented by any organisation, including private sector buyers and ‘competitors’ of ARM seeking to implement traceability in supply chains. This is certainly a novel approach and one that is much commended here for its ability to help foster a community of practice around formalisation, and to enable more actors to potentially source from the small-scale mining sector. At its core, it is based on the Organisation for Economic Cooperation and Development’s (OECD) Due Diligence Guidance and is designed to enable licensed small-scale miners to meet minimal chain-of-custody standards so that they can reach international chains. This approach of only engaging with ‘legitimate’ producers is encapsulated in the extract from the draft code:

The CRAFT is expected to support the efforts of legitimate gold producers from the ASM sector to sell their product to formal supply chains and, vice versa, help downstream supply chain actors to engage with legitimate ASM producers [CRAFT, 2018, p.5].

Of greatest interest here is the way in which ‘legitimate’ ASM producers has been defined. This has been undertaken through reference to the OECD Guidance, which states, as reproduced in the CRAFT (2018, p. 21):

Legitimate refers, among others, to artisanal and small-scale mining that is consistent with applicable laws. When the applicable legal framework is not enforced, or in the absence of such a framework, the assessment of the legitimacy of artisanal and small-scale mining will take account of the good faith efforts of artisanal and small-scale miners and enterprises to operate within the applicable legal framework (where it exists) as well as their engagement in opportunities for

formalisation as they come available (bearing in mind that in most, cases, artisanal and small-scale miners have very limited or no capacity, technical ability or sufficient financial resources to do so.

The code then provides a series of ‘country context cases’ which have three progressively challenging criteria ASM operators and other supply chain actors, who are collectively referred to in the document as ASM Mineral Producers (AMPs), must meet to be compliant. These are outlined under the following headings: 1) Fail criteria; 2) Progress towards Fulfilment of the Requirement; 3) Fulfilment Requirement (p. 21).

Overall, the document certainly appears geared towards organisations looking to source from small-scale miners, as opposed to informal operatives being able to implement it themselves to reach new markets. This is due to the highly detailed, and complex nature of the CRAFT in the first instance. Indeed, any organisation looking to implement the code, and source from ASM operations in the first place, would need considerable resources, as well as a legitimate business case to do so. Confusingly, the designers of the code and its associated document, in contrast to every other piece of literature, have also chosen to refer to activities that are higher in the chain of supply (i.e. closer to the national level) as ‘downstream’ of small-scale miners, and those that are below are upstream. Stating that ‘the organizational scope of CRAFT covers miners and optionally aggregators at the upstream end of the supply chain, down to the point ... where the gold enters the supply chain downstream of the CRAFT scope (CRAFT, 2018, p. 6). There appears to be very little rationale for this other than to place CRAFT at the centre of the supply chain so that ‘the ASM producer and therefore – from the perspective of the CRAFT – is referred to as a “downstream” operator’ (CRAFT, 2018, p. 8). Furthermore, in reference to its ‘geographic scope’ it is supposedly ‘global ... without any excluded areas’ (p. 11) demonstrating no effort on the part of the designers to try and tailor it to regional and/or national contexts, which as the analyses throughout this thesis has shown is essential to designing any effective intervention due to the extreme heterogeneity of activities.

Indeed, despite the recognition of the limited capacity for impoverished miners to manoeuvre in legal frameworks there are still significant questions over the utility of the new code that extend even from the light-touch critical reflection that has been undertaken here. As with the concerns relating to other certification initiatives; who will undertake the activities necessary to help move informal ‘legitimate’ ASM operators up through the increasing fulfilment criteria? Moreover, why is the CRAFT still predicated on a model of export that comprises removing unprocessed diamonds and unrefined gold from producer countries, and ignoring the host of value-addition activities, outlined throughout this chapter, that could help to have a transformative development impact and empower a range of marginalised, impoverished and semi-formal actors embedded at the lower levels of ASM supply networks? As outlined, there is still a clear need for more detailed information about the functioning of ASM activities the GPN analyses can help to provide.

Without complementary initiatives that address the root causes of informality and help develop a conducive ‘opportunity structure’ that empowers informal ASM communities to readily obtain mineralised land, licences, as well as much-needed formalised channels of finance and support services, certification initiatives will continue to only be able to help a small minority of licensed and largely elite operators.

6.6 Conclusion

This chapter has critically reflected on the mapping of the social production networks through the case studies of Akwatia and Tarkwa undertaken in Chapters 4 and 5. It began by reflecting on the significant potential of the adapted framework to provide detailed information on informal economic activities such as those found in the ASM sector. Crucially, it has outlined how the adapted GPN framework enables the researcher to ‘deep dive’ into the heterogeneity of the social process underlying mineral production networks that traditional linear and value focused chain methodologies are not designed to do. Thus, re-affirming its use for producing richer theoretical insights that can be used to produce analysis and develop pragmatic recommendations to improve the livelihoods and development outcomes of those engaged in challenging, dangerous, and life-limiting informal labour activities such as ASM. In this way, it has been used to reconceptualise ASM activities as being embedded within *social production networks*, which are characterised, at all levels, by deeply-entrenched trust-based relationships of mutual reciprocity and benefit. And better visualise, recognise, and understand the complexities and fine details of the network structure and functioning.

Next, the chapter critically reflected on, and further developed the analyses in, Chapters 4 and 5 to examine, in depth, the invaluable and multiple roles that middlemen play. It showed how through fully understating how the diamond and gold markets operate in Ghana, that they could potentially be harnessed to the benefit of the national economy, small-scale miners, and the ASM communities in which they are deeply embedded. This, it was argued, would require a radical ‘re-think’ in the current activities of PMMC and other government agencies, as well as the way in which certification initiatives have hitherto understood their functioning in networks of supply. A draft blueprint was outlined in this respect, again demonstrating the way in which the GPN framework can be used to develop rich insights and in-depth policy recommendations.

Through understanding the networks of ASM production, and focussing in on value of the key analytical categories of the GPN framework, a range of activities for creating, enhancing, and capturing more value in host countries were outlined. These focused on social upgrading activities, and argued that certification initiatives should improve their understanding and communication of the fundamental barriers to formalisation facing small-scale miners in order to effect more bottom-up change. Finally, the chapter reflected on how best to reach the informal ASM economy, by narrowing in on key gaps highlighted over the proceeding analyses in Chapters 4, 5, and 6, and, the extent to which the most recent efforts from ARM and its partners could be considered to be capable of providing transformational change.

Chapter 7 – Conclusions

7.1 Situating the research

This thesis has shown that artisanal and small-scale mining activities are deeply embedded within social production networks which are characterised by trust-based, reciprocal relationships of mutual cooperation and benefit. These semi-formal networks of labour and production are far-reaching, multi-layered, multi-directional and highly complex. They are shaped by long histories of socio-political developments and interactions with 'lead firms' that continue to influence the contemporary functioning of their network structures. Understanding these factors, it has been argued and indeed demonstrated, is necessary to develop rich theoretical insights as well as evidence-based ideas with which to inform the formulation of pro-poor formalisation and ethical mineral certification initiatives for the ASM sector. The objectives of this thesis are briefly revisited here, after which the key findings, contributions, limitations and potential future work arising from the research are outlined and discussed.

In recent years, greater public attention and awareness in global policymaking circles has been drawn to the daily struggles facing impoverished artisanal and small-scale miners who are embedded at the base of global mineral production networks in rural communities throughout sub-Saharan Africa. In an effort to address the – what has been referred to throughout this thesis – 'expressions' of the sector's deeply-rooted informality, a number of ethical mineral certification schemes have surfaced. Broadly, the designers of these schemes claim that they are tackling the significant human and environmental cost of ASM activities, which, *inter alia*, contribute as much as 20 per cent of the world's diamonds and gold each year. Yet, and as was explained in Chapter 2, despite a number of concerns raised in the academic literature (Hilson, 2008; 2014; Childs, 2008; 2010; 2014; Kessler, et al., 2015; McQuilken, 2016; Hilson and McQuilken, 2016; Hilson et al., 2016; Fisher, 2018) with regards to the efficacy of certification for the ASM sector, the propensity for elite capture, targeting of low-hanging fruit, and a misdiagnosis of key actors under these types of schemes, their development has continued largely unhindered. Without critical reflection either on the part of the designers themselves or the wider development community, certification, transparency, and traceability have become the *zeitgeist* with which to address the governance woes of Africa's mineral resources and to harness ASM activities for 'good'.

Furthermore, despite over four decades of detailed academic research, and lacklustre interventions spearheaded by a range of global stakeholders from across the international development community, to date, very little progress has been made in formalising ASM activities and bringing operators into the legal domain. As has been a recurrent argument throughout this thesis, it is only once informal miners are brought into the legal domain as a first step in the process of formalisation, that the range of deleterious impacts associated with the sector can be addressed effectively. It is against this background that this thesis has sought to address the following overarching research question: How can ethical mineral certification initiatives and formalisation strategies provide genuine transformational change for artisanal and small-scale miners in sub-Saharan Africa?

This thesis has illustrated that, with a detailed understanding and conceptualisation of the social processes that underlie semi-formal socio-economic activities such as ASM, it is possible to develop rich insights with which to form evidence-based policy recommendations. These can then be used to improve development outcomes for some of the world's poorest and most marginalised people. If harnessed properly, the revenues and socio-economic activities associated with the ASM sector in sub-Saharan Africa could provide the foundation for a holistic and largely domestically-funded socio-economic development strategy, capable of propelling the region's economies onto more sustainable development trajectories. At the same time, it would catalyse the formalisation of a sizeable share of the tens of millions of people directly engaged in the sector, as well as provide more sustainable employment for many millions more in the support services that proliferate throughout the rural communities where activities take place.

The first objective of this thesis was to use the adapted GPN framework that was developed in Chapter 2 to examine the overarching policy frameworks operating in sub-Saharan Africa, and specifically Ghana ('Critically reflect on why formalisation has proved to be so elusive by mapping and examining the overarching international and national mineral governance frameworks operating in sub-Saharan Africa, and specifically Ghana, as well as the activities of ethical mineral certification initiatives in the country'). The detail and information gleaned from this analysis was then used in order to reflect on and understand why formalisation has proved to be so elusive in the region to date. The remainder of the objectives are summarised in Table 7.1 *vis-à-vis* where they are addressed in the thesis. Through the analysis in Chapter 4, it was shown that a large-scale mining bias, inaccessible licensing process, and a lack of recognition and support of the livelihoods dimension of ASM, has, in combination, further entrenched activities in the informal economy. All of this is owed heavily to a limited understanding of, and disconnect from, how the networks of ASM operate at the community level. With this knowledge on-hand, Chapter 5 mapped the local-level dynamics of ASM at the key nodes of socio-economic activities in the case study sites of Akwatia and Tarkwa, thus helping to reveal the complex trust-based partnerships that exist at all levels of the network, and especially its base where the precious minerals move horizontally multiple times over. Finally, in Chapter 6, these findings were distilled further to reflect on the utility of the GPN framework. It focused heavily on highlighting the invaluable role that middlemen play, under the circumstances, in facilitating ASM activities against the background of an opportunity structure for the sector that is devoid of state-support for both licensed and unlicensed miners. The chapter also developed a draft blueprint to harness the power of the middlemen to capture and enhance more value from the sector. It emphasised key value-adding and social-upgrading activities that mineral certification schemes should look to undertake if they wish their interventions to be pro-poor and have a truly transformational impact in a way that empowers impoverished small-scale miners to become agents of their own change.

Through application of the adapted GPN framework, a number of key themes have emerged. With the research summarised and situated in the wider context, these contributions to knowledge, which have also addressed a number of the key gaps in literature outlined in Chapter 2, are now discussed in the next section of this chapter. Overall, this final chapter of the thesis critically reflects on the key research

findings, links these to wider academic and policy debates, and concludes by reflecting on what they mean with regard to engendering a transformational development impact for the region's impoverished small-scale miners.

Table 7.1 Summary of aim and objectives and where they are primarily addressed in the thesis

Research question	How can ethical mineral certification initiatives and formalisation strategies provide genuine transformational change for artisanal and small-scale miners in sub-Saharan Africa?	
Research aim	To broaden understanding of the demographics of ASM groups operating in rural sub-Saharan Africa, the dynamics of their operations and the intricacies of the local production networks they are a part of in order to provide perspective and policy recommendations to improve the design and implementation of for ethical mineral certification initiatives and formalisation strategies that are more in-tune with the realities of ASM on the ground.	
Research objectives		Key chapters
1. Critically reflect on why formalisation has proved to be so elusive by mapping and examining the overarching international and national mineral governance frameworks operating in sub-Saharan Africa, and specifically Ghana, as well as the activities of ethical mineral certification initiatives in the country.		• Chapter 4
2. Improve understanding of the dynamics of local ASM production networks, operators, and their experiences within the poverty trap by applying the adapted GPN framework to map and analyse the social networks of artisanal and small-scale gold and diamond production in Ghana.		• Chapter 4 – national level • Chapter 5 – local level • Chapter 6
3. Explore the potential and critically reflect on the utility of the GPN framework for generating new insights and knowledge by applying it to map local ASM production networks.		• Chapter 5 • Chapter 6
4. Provide specific and generalisable policy recommendations for improving formalisation strategies and ethical mineral certification initiatives in Ghana, as well as the wider sub-Saharan Africa region, that are more in tune with the realities of ASM on the ground.		• Chapter 6 • Chapter 7

7.2 Key findings and contributions

Through the implementation of the adapted GPN framework to map the key nodes of informal ASM activities in Akwatia and Tarkwa, a range of rich insights have been generated. Here, the key findings and contributions to knowledge of the inaugural analysis of the small-scale mining nodes in Akwatia and Tarkwa undertaken in this thesis, and their implications for academic and policy debate, are outlined.

7.2.1 The dynamics of informality

The first key finding and contribution to knowledge concerns the advancement of the GPN framework and associated literature, specifically, justifying its utility in mapping and understanding the dynamics of informal socio-economic activities. Through a fuller conceptualisation of embeddedness which drew on the works of key social theorists (Polyani, 1944; Granovetter, 1973; 1985; Putnam, 1995) and more recent studies examining social relations and informality in African and developing country contexts (Lomnitz, 1988; Coleman 1998; Höhmann and Welter, 2004; Lyon, 2005; Burbidge, 2013; Chan, 2013; Odera, 2013), the framework was extended to examine the role of trust and reciprocity in informal economic settings. Though the thesis did not set out to examine informality explicitly, in considering the role of trust and reciprocity which are shown to be crucial for informal transactions, it has undoubtedly uncovered and shared valuable information which casts light on how informal sectors, such as ASM, function. In particular, it has helped to locate, and illustrate, how and where the nexus of informal and formal activities meet at the key nodes in the given social production networks. In doing so, the lenses of embeddedness, trust and informality have generated rich insights, characterising the roles of the various

agents involved, and how the functioning of the semi-formal socio-economic activities contributes to value creation and capture, as well as the network structure. This 'informality' lens has also helped to develop a detailed map of the movement of minerals and an understanding of the relationships throughout the network, as well as critical nodes and entry points for intervention.

With regard to the wider academic literature, there are certainly a number of very clear contributions that this thesis has made. To date, aside from a handful of papers (e.g. Bridge, 2008; Dicken, 2011; Phillips, 2011; McGrath, 2013; Radhuber, 2015; Dos Santos and Milanez, 2015; Breul and Diez, 2018) very few studies have applied the GPN framework to informal industries or the extractive sectors. This is somewhat surprising, given that it is the area where, as demonstrated, the framework and deeper analytical categories such as embeddedness, could have one of its greatest impacts. Furthermore, aside from one recent eight-page paper that attempts to use the GPN to look at the risk and uncertainty between ASM and large-scale mining companies by Geenen (2018),¹⁵⁶ this thesis and its associated publication (McQuilken and Hilson, 2018) is the first time that the framework has ever been applied to the ASM sector. The findings and insights generated here are therefore significant contributions to the interrelated literature on global commodity studies, value chains, labour agency, global production networks, informality, and ASM.

More specifically, with regard to how informal agents interact with formal parts of the economy, the analysis has also provided useful insight into how the role of 'lead firms' differs in informal settings. It has revisited the earlier conceptualisations of the GPN, which were developed with the assumption that production and networks revolve and develop around a 'firm'. However, while it was, by and large, the establishment of the early mining companies in the case study locations of Akwatia and Tarkwa around which the town's socio-economic activities and nexus of mineral production coalesced, in a departure from the preceding GPN literature, it was their deterioration and mechanisation, *not* the success of these 'lead firms', that galvanised and embedded the networks of ASM production and clusters of economic activities in each place. The analysis therefore shows quite clearly that as a framework for analysing the nuances of the informal economy, the GPN can be adapted, reworked, and theoretically and conceptually advanced for this purpose. As was highlighted in Chapter 6, this thesis has therefore produced an analysis rooted in the framework's initial goal of improving the 'human condition in [an] age of economic and geo-political turbulence' (Henderson et al., 2002, p. 358). This is a clear contribution to knowledge. It is also a powerful feature of GPN studies that, as argued in the literature review, had been lost in recent years, but which, through this thesis, has been demonstrated is possible, and as such, should be returned to as the point of emphasis in the academic literature and case studies using the GPN framework moving forwards.

¹⁵⁶ It should be noted here that Geenen's (2018) paper which was received by the journal *Geoforum* in August 2017, and revised, accepted, and made available online at end of February 2018, going into print in May 2018, contains a superficial and underdeveloped analysis, and applies only of a small portion of the analytical power of GPN framework to examine the 'production of risk' and uncertainty, using 'GPN theory' to focus on the 'gold production network' (including ASM) in the DRC. Strikingly, the author's paper also appears to have been, at least, partially informed by a paper presentation (McQuilken and Hilson, 2018) that was shared by the PhD researcher at an intimate 10-person workshop attended by the two parties in Antwerp, Belgium 22–23 September 2016. Geenen (2018, p. 37) also acknowledges that an earlier version of the paper titled 'How uncertainty is shaping gold production in Eastern DR Congo' was presented at the Conference on Artisanal and Small Scale Mining in Africa, Nordic Africa Institute, Uppsala, Sweden, 10–11 November 2016 – over a full month after the workshop in Belgium.

7.2.2 The Social Production Network framework for mapping informal small-scale mining activities – A new methodology?

Perhaps it is a step too far to claim that an entire new methodology has been developed through this thesis. However, the development of the adapted GPN framework in Chapter 3, and its mobilisation to map the informal networks of ASM production in the subsequent chapters, has certainly demonstrated its significant potential. It has helped to shed further light on the heterogeneity and characterisation of the ASM sector's activities, adding to this crucial part of the literature (e.g. Fisher, 2007; Hilson and Potter, 2005; Verbrugge, 2015). As has been argued throughout the thesis, it is this level of detail and information that is so desperately needed to uncover the sector's complex social processes and labour structures that have continued to comprise a largely 'black-box' of socio-economic activity, particularly for policymakers. This lack of detail, it has also been shown, is what has contributed to erroneous and highly-damaging perceptions of the sector and its key and invaluable actors, such as middlemen.

In particular, one significant way in which the Social Production Network framework has provided new insights is through the mapping of the horizontal movement of diamonds and gold especially at the lower rungs of the supply networks. As outlined by McQuilken and Hilson (2018), and also as an avenue for potential future work, perhaps the existing GPN and related linear commodity and value chain scholarship needs to conceptualise this 'progression' differently. This is because, it is argued, 'horizontal' tends to connote a plateauing when, in fact, these relationships are essential in determining how value is created, enhanced and captured at each node. In informal economies, the boundaries of nodes are more blurred and clustering of activities such as those in Akwatia and Tarkwa have come to form semi-formal nodes of exchange and production. Different actors are active across multiple functions and at multiple 'levels' and they link many different agents together. A future avenue of research concerning these horizontal movements could, therefore, be to refine this conceptualisation of transactions, at least in informal sectors such as ASM, to become 'diagonal' flows. This would signify progression while at the same time projecting the movement as incremental. Regardless of the output, given the unpredictability of flows of resources, power, and value in informal spaces, a more refined conceptualisation of 'movements' is needed. The Social Production Network that has been developed in this thesis could therefore be the analytical tool with which to do so.

7.2.3 Reconceptualising the role of middlemen

A further crucial and related finding with regard to how the Social Production Network framework can be used to reconceptualise activities is, as demonstrated, through its ability to 'lift the veil' on the role of the so-called 'unscrupulous middlemen'. Through the Social Production Network framework, Chapters 5 and 6 unpacked the various roles of sponsorship, buying, and trading at all levels of the network that comprise activities of middlemen. This is likely the stand-out finding of the research. It has significant implications not only for the current ineffective state-led gold buying programme under PMMC, but also for the falsehood perpetuated by many certification schemes that chains of supply need to be shortened

and ‘unscrupulous’ middlemen should be removed. Instead, this thesis has shown that, not only are middlemen legitimate market players, but they are also crucial to the functioning of ASM networks. It has also been outlined in a draft blueprint in Chapter 6 how, with a carefully considered approach, their power could be harnessed to fortify and formalise the networks of supply, and catalyse wealth creation and entrepreneurship in rural communities.

7.2.4 Developing a draft blueprint for pro-poor ethical mineral certification schemes

It is clear from the analyses in the later parts of this thesis that under their *current* model, it is not possible for ethical mineral certification schemes to effect the transformational change and empowerment of the vast majority of impoverished artisanal and small-scale miners in Ghana, and the region more broadly, who operate in the informal economy and are in most need of their support. The analyses in this thesis have, however, highlighted a number of key ways in which organisations can seek to reach and connect with small-scale miners in order to develop pro-poor initiatives that are more in tune with the realities on the ground. These are summarised here in order to provide a draft blueprint for pro-poor ethical mineral certification schemes to follow:

- 1) Recognise that there are gaps in understanding of the functioning of ASM in sub-Saharan Africa, and that the sector’s activities are characterised by a high degree of heterogeneity that differ at local, national, regional, and global scales.
- 2) Recognise that there may be a need, and willingness, to alter current models to fit the local contexts they seek to target.
- 3) Seek to better understand the reality of mining communities on the ground and specifically that of informal operators who are most in need of support.
- 4) Review the findings and recommendations made in this thesis, seek the advice of academic experts, and commission additional research to better understand the national and local gold, diamond, and jewellery markets, the role of middlemen, and the political economy of the countries in sub-Saharan Africa in which they seek to establish certification schemes.
- 5) Based on the findings from the exercise in point 4, consider how to develop value adding and social upgrading activities in partner countries, partnerships with local businesses and key government agencies, and reach informal small-scale miners and communities either directly or indirectly.
- 6) Consider other actors and entry points in ASM networks, such as middlemen, to work alongside in order to support and begin to reach informal small-scale miners.
- 7) Work progressively towards developing African markets for certified jewellery and helping to keep more value in host countries.

7.2.5 Working within the confines of the policy and government machinery

Another key finding relates to the challenges of working within the confines of an international policy and government machinery that for the past forty years has repeatedly, and continues to, prioritise the development of large-scale mining over and above that of ASM. While the daily challenges faced by small-scale miners are garnering renewed attention in donor and policymaking circles, as well as attention from Africa's national economies keen on harnessing their natural resource bases and addressing the often reported social and environmental 'ills', the failure to address the fundamental drivers of informality remains very real.

The mapping of the regional and national level governance frameworks undertaken in Chapter 4 very clearly demonstrated how the overarching opportunity structure has acted to constrain the agency and empowerment of small-scale miners to effect change, and prevented them from easily obtaining the permits and support needed to mine and improve the negative impacts and efficiency of operations. Specifically, Chapters 4 and 5 have mapped how the policy environment and regulatory apparatus is grounded in long histories of mining, labour, and production that continue to shape the functioning and structure of contemporary ASM activities. An understanding of the past interactions between small-scale mining communities and their 'lead firms' has been shown to be integral to understanding the sector's activities found in these locales today. The findings from this thesis have also shown how the process of formalisation is deeply attached to, and intertwined with, political processes, making change a time-consuming and challenging endeavour. Organisations seeking to effect positive change in the sector, whether it be through pro-poor certification initiatives or otherwise, must not lose sight of this fact and be prepared to commit to long-term programmes that stretch far and beyond political cycles, both from donor country government perspectives and those of host countries.

7.3 Recommendations

Here, the more general policy recommendations developed through the in-depth discussion in Chapters 4 and 5, and the synthesis in Chapter 6, are distilled further in consideration of the implications from the findings outlined above. This is undertaken in order to provide a set of clear and specific recommendations that are disaggregated by the key stakeholders in the Ghana mineral production network. This section of the chapter therefore fully ensures that Objective 4 has been addressed ('Provide specific and generalisable policy recommendations for improving formalisation strategies and ethical mineral certification initiatives in Ghana, as well as the wider sub-Saharan Africa region, that are more in tune with the realities of ASM on the ground'). Where possible, and appropriate, the recommendations follow the SMART criteria (Specific, Measurable, Achievable, Realistic, and Time-bound) which is an approach found in business and project management to help ensure the success of projects and initiatives (see Drucker, 1955 and Doran, 1991 in CMI, 2011; Maylor, 2010). Should any of the stakeholders identified below be serious about taking the recommendations forward, as a first step, they should develop them further into full theories of change. This is an approach which is now a regular feature of

international development projects and is used to map logical outcomes (Valters, 2015). Recommendations with regards to the future academic potential of the work are outlined in Section 7.5.

7.3.1 Ministry of Lands and Natural Resources

The recommendation here is obvious: immediately repeal the ban on ASM activities and embark on a bottom-up and inclusive programme of reform for the ASM sector. This programme should be led by a cross-party working group that is comprised of senior members of the core mining as well as non-mining government agencies affected by ASM activities (e.g. Forestry Commission, Lands Commission, Ghana Cocoa Board, Ghana Revenue Authority, Ministry of Employment and Labour Relations, Ministry of Food and Agriculture, Ministry of Gender, Children and Social Protection, Ministry of Local Government and Rural Development, Water Resources Commission of Ghana (McQuilken and Hilson, 2016)). Crucially, it should also include representatives from the media, small-scale mining community, and academia and undertake, as a priority, a review of the existing policy in, and research documents on, the sector. Following on, a strategic plan should be made to establish a costed list of priorities for action, such as commissioning in-depth research, streamlining and properly decentralising the licensing process, and developing accessible educational and support services at the community level.

This could then be refined into a holistic formalisation plan with which to approach donors and other sources of finance for support. Crucially, the legislation covering the sector needs to be amended to remove the power of the Minister to use it as a political bargaining chip. The funding being used to undertake military-style sweeps of illegal camps such as through Operation Vanguard should be diverted for these more proactive activities outlined here, as well as for those in Chapter 6. A portion of the mineral development fund (Table 4.3) could also be repatriated for these types of activities.

7.3.2 Minerals Commission

The Minerals Commission should embark on a process to fulfil the parts of its original mandate outlined in Chapter 4 (Table 4.3) that it has rescinded on at the local level in recent years. It should reach out to local government agencies and assemblies to seek partnerships for intervention in ASM communities, build further bridges with licensed small-scale miners through GNASSM and other forums, and enhance data collection and dissemination of ASM activities. At the national level, it should seek to challenge the Ministry of Lands and Natural Resources to decentralise the licensing process and make it more accessible, as well as lobby for the development of a cross-party working group and more of a technical administration for the development of the country's mineral resources. It should also work with agencies such as the Geological Survey Department to identify areas of mineralised land and earmark them solely for small-scale miners.

7.3.3 PMMC

As a priority, there is a need to review, assess the feasibility of, and further develop the blueprint presented in Chapter 6. This outlines a reoriented model of revenue collection and involvement in the ASM sector focused on proportional taxation on exports from ASM at national level, and a light-touch regulatory and supportive approach at the base of mineral production networks. There is also a need for the organisation to take a lead in forging partnerships with organisations such as the Fairtrade Foundation and ARM to develop a domestic jewellery making industry and markets, and to commission research and collect data to map the nascent jewellery and refining industry.

7.3.4 Local government assemblies

There is a need to develop, in tandem with other local agencies, a plan of action for collecting data and understanding the specificities of ASM activities in the Assembly to subsequently develop a plan of action that is grounded in this local evidence base. Moreover, local government assemblies must undertake, as a priority, crosscutting outreach and educational activities with ASM communities, and help establish formal channels of dialogue. On a more general note, they need to take more responsibility and assume more of an active role alongside the local offices of the Minerals Commission to support small-scale miners in their respective jurisdictions.

7.3.5 GNASSM and informal small-scale miners

GNASSM should continue its lobbying in national media outlets and dialogue with government. However, it should also look at ways to further professionalise its membership base and representation of all members including those at the lower level. The organisation should also ensure the representation of women across all levels, and seek ways to reach and represent informal small-scale miners in a way that does not undermine the credibility of the association with government. This could be done by having a separate 'ASM community stakeholder' affiliation so as to not strictly identify members as *galamsey* operators, while at the same time, afford members the benefit of collective power and support. This could also be used as a basis for the development of cooperatives which are a pre-condition for many certification schemes. It could also help government develop clear communication and grievance channels, and ways to go about collecting more information about the sector with which to inform policy. To this end, GNASSM should also use their existing networks to undertake consultations with its members and collect useful data and information on the sector that can be used to address the deficiencies in detail, explore further the issues raised in this thesis, and to support their lobbying efforts.

7.4 Critical reflections on positionality and limitations

This section of the chapter critically reflects on the research process followed in this thesis with regard to the positionality of the researcher. Positionality is defined here as ‘the practice of a researcher delineating [their] position in relation to the study, with the implication that this position may influence aspects of the study, such as the data collected or the way in which it is interpreted’ (Qin, 2016, p.1). It also reflects on the limitations of the thesis more broadly as well as the GPN methodology that was adapted and employed, and considerations for its refinement. This critical reflection is especially important for this thesis given that it is the first time the GPN framework has been applied to analyse the workings of the ASM sector. It is also one of the few studies to apply it to an extractives sector production network as well as informal socio-economic activities.

7.4.1 Positionality

It is instructive to first offer some critical reflections with regard to positionality. Undertaking research within largely impoverished small-scale mining communities in developing country settings such as Ghana is associated with a unique set of challenges. This is especially true given the highly politicised nature of ASM, significant value of the minerals involved, and the largely informal, illegal and often clandestine nature of activities. These factors are made more acute by the position of the researcher as a white, mid-20-year-old, British, Western male born and raised in the UK and the baggage associated with this prior life experience, such as being a citizen of Ghana’s ex-colonial power and male gender. It is therefore necessary to be aware of how this position has influenced the research; take mitigating action as was outlined in Chapter 3 to ensure the validity of findings as much as possible; and also recognise the advantages and disadvantages as a result. For example, writing about undertaking research in developing country settings, Binns (2006, p.19) explains how:

Howard (1994) warns that the positionality of the researcher can affect an interview, because there is often a tendency for respondents to tell the researcher what they believe he or she wants to hear, especially when there is a marked power inequality between the two.

This was certainly the case in Ghana. A number of examples serve to illustrate this here in order to demonstrate the ways in which (and awareness of how) the researcher’s positionality has affected the study. A common occurrence when meeting people engaged in ASM activities for the first time was the assumption that the researcher was there to purchase diamonds or gold, and that they would be able to benefit the potential interviewee in a more immediate way. As such, the answers provided in some interviews needed to be treated with some caution to ensure that the interviewee was not trying to appease the interviewer, especially in instances where the prices and quality of precious minerals were being quoted. These values must also be treated with a degree of caution due to the varying levels of education of research participants, and because without undertaking a quantitative survey (or similar), it is not possible to generate a statistically significant sample that would enable the calculation of an

average (mean) price or payments received. The research therefore focused on the relationships between the agents trading and the relative amounts between two values such as the buying and selling price of a pound of gold. Furthermore, even if a statistically relevant figure was obtainable the shifting daily prices of diamond and gold markets and wide range of factors that influence their value, such as the partly-subjective valuation of diamonds based on the 4Cs (colour, clarity, cut, and carat weight), and pre-existing relationships and sponsorship arrangements between ASM actors, make the reliability and usability of exact values largely defunct. An extract from the researcher's field notes as well as an extract from a recorded interview illustrates some of these points clearly:

Finally, an older man came over (60+) who was the land owner. He gave a brief history of the land and said it is full of gold. Perhaps he mistook us for investors as he said that despite the Chinese and Ghanaians ripping the community off in the past (actually he said not benefiting) there was still some land he would give us if we were interested.¹⁵⁷

I just want to ask with regards to everything he [the researcher] has written, if there be any help, what kind of help can he give to me?¹⁵⁸

Though the co-created knowledge between the researcher and researched is unique to the conversation and prior experience, knowledge, and understanding at that point in time (Chapter 3), a number of strategies were employed to mitigate any 'noise' in such instances. For example, ample time was taken with the support of local research assistants to clarify any questions during the interview, reflect on what the day's interviews had shown, and be sure that the participants, and the researcher, had fully understood the meaning of the questions and responses. In Akwatia, due to the research assistant being from the town, it was possible to sit down over several hours to sketch out the initial GPN diagram and connect all the different socio-economic activities being undertaken. This helped to provide a very rich, detailed, and more accurate understanding. However, it was also important to be aware of the research assistant's own positionality in this context and when interviewing participants.

Furthermore, during certain interviews, and especially those conducted in *Twi*, it was particularly important to 'sense check' responses with the research assistant during the interview, and again when the audio recordings were translated and transcribed by a different person. This process demonstrated how responses were sometimes paraphrased by the field assistant during the interview and so when transcribed it was possible to ensure the exact responses and raw data were captured. It also had the benefit of ensuring any complex terminology, 'ways of doing', customs, and any pidgin English or *Twi* phrases, idioms, and sayings used, were correctly understood. While all translated responses will be more open to interpretation than when the researcher is interviewing in his/her mother tongue, the length of time spent living in Ghana and embedded in local communities over the year, and the sense checking undertaken in the way described, helped to provide added depth, context, and meaning. A good example

¹⁵⁷ Field diary, evening reflection, 20th July 2015

¹⁵⁸ Interview, 27th July, 2015, gold buying shop

of this was the use of the 'pound' as a weight for gold which is based on an old Ghanaian measurement 0.8g (0.775g) that was equivalent to the weight of an old British pound coin. However, when first undertaking interviews there was some confusion as the weight was assumed by the researcher to be the pound (lb) from 'pound and ounces' given that gold is weighed in troy ounces. This confusion became apparent when trying to calculate the different prices per weight and amounts of gold being traded. The positionality and prior knowledge and experience of the researcher has therefore certainly influenced the study in a number of ways, beginning with those outlined here.

7.4.2 Limitations

One the most significant limitations of this particular study, which has been alluded to already, is the scale of the GPN. The ability to capture the details of such a wide range of socio-economic activities through GPN mapping is also, in part, one of its major shortcomings. The time needed to sketch the initial network structure, to identify key stakeholders, collect the relevant data, and subsequently synthesise this information in order to develop coherent and meaningful insights is certainly a challenge for a lone researcher. So is the temptation to capture every single node and activity found in the network. It is necessary, therefore, to have a clear idea of where to draw the 'box' around the network and decide what to include and what to leave out. As discussed in Chapter 6 (Section 6.2.2 see Kaplinsky and Morris, 2002), this requires the researcher to use his/her own judgement, and depending on his/her interests and the focus of the study, it may highlight or relegate different activities within the node under investigation and the wider network as a whole. Examples of these types of judgements that had to be made in this research include the decision not to capture the suite of ancillary activities associated with ASM, such as the supply of timber to build the wooden 'cage' that is used to reinforce the shafts at underground pits, or the inputs of equipment and finance from the very significant numbers of Chinese businesspersons operating in the sector. Furthermore, due to the length of time required to process all of the details, it was not possible to include detailed maps of other sites visited. The thesis would have benefitted from the presentation of a licensed small-scale gold mine site to accompany that of the *galamsey* and tributer site maps that were produced (Figures 5.8 and 5.9).

In addition to these limitations, which are linked to the GPN (and refined Social Production Network) framework's practicality, there is a more significant limitation with regard to the underlying theoretical framework of linear chain-type analyses as well as the GPN framework itself from which it has been developed. The GPN, including the adaptation of it developed in this thesis, draws on a wide range of academic disciplines, each of which comes with its own philosophical and theoretical baggage. This point was highlighted in the literature review with reference to Bernstein and Campling (2006a, p.240) who rightly explain that this body of literature they define broadly as 'commodity studies' has 'no common purpose, object of analysis, theoretical framework or methodological approach'.

Indeed, with no solid conceptual and theoretical basis to develop the research framework, considerable time and effort had to be made in order to extend the original GPN further back into the wide range of

academic and theoretical fields from which it originates. This is also a limitation of its original development by Henderson et al. (2002). While the adaptation featured in the thesis has certainly produced a more theoretically enriched framework, particularly with regards to the analytical categories of 1) embeddedness, which was extended to include notions of interpersonal trust; 2) power, which was developed to the fuller conceptualisation of empowerment, and; 3) value, which was broadened to move beyond purely economic ideas, it has also meant that a wide range of concepts and theories had to be weaved together. As outlined in Chapter 3, despite the 'blending of philosophical perspectives' in social science research being an increasingly common and accepted approach, the need to bring together such a wide spectrum of literature and ideas has meant certain compromises have had to be made. These have been at the expense of delving more deeply into fewer, or even one, dominant theoretical perspective with which to analyse ASM activities. Thus, by not specialising as a researcher in a single theoretical domain, some of the potential explanatory power of key theories may have been lost. This limitation however, as the next and final section of this chapter and the thesis outlines, highlights an avenue for future work in focussing in on one of two of the elements of the framework to delve more deeply into the social processes and key features of informal ASM activities.

A final limitation in need of recognition concerns the generalisability of the findings. As presented, the research in this thesis was based on the two case studies of diamond and gold in Ghana. Furthermore, as is clearly shown through the extreme heterogeneity of the sector, a point repeatedly made in this thesis, a degree of caution is needed when making analytical generalisations about other nodes of the network in Ghana, as well as in other countries and regions of the world where ASM is commonplace. That being said, there are still some very clear findings, recommendations, and lessons that have been outlined in this chapter and which have produced a set of broadly applicable insights.

7.5 Future work

There are a number of avenues for future work that can be developed from the findings of this thesis. These are discussed here in order to look forward to the potential future impact of the work undertaken and bring the thesis to a close. Chief among the potential areas for future work is the refinement of the adapted Social Production Network methodology itself. As outlined, the sheer scale of the network being studied makes it a challenging endeavour to capture all of the different activities, agents, and nodes, and synthesise this information into one coherent output. Yet, it is precisely the importance of this level of detail, as has been argued throughout this thesis, and indeed posited here, that has been demonstrated by undertaking the mapping, that makes the adapted Social Production Network framework such a powerful analytical tool for revealing the hidden and overlooked social processes in ASM activities.

One such avenue in this regard is therefore to develop the Social Production Network methodology further through the creation of a 'handbook'. This would be similar to others that have been published on empowerment (Narayan, 2002) and value chains (Kaplinsky and Morris, 2002). In the first instance, the framework could be used as a tool to guide a series of in-depth fieldwork exercises and generate a

compendium of case studies that capture the fine details of the functioning of the sector across different countries, contexts, and regions, and help refine the methodology further. Once developed, the framework could be streamlined to provide a means for a rapid yet comprehensive assessment of ASM operations that would be useful to policymakers, and to researchers, as well as to help the sector become streamlined into wider development programmes that would otherwise focus solely on large-scale mining. This is something that is already being actively pursued by seeking funding from the international donor community and exploring avenues for academic and commercial partnerships.

Relatedly, another way in which to further refine, and enhance this framework and its use would be to focus in separately on the key analytical categories of embeddedness, empowerment and value. This would enable a deeper analysis in all three areas to further reveal the inner workings of ASM production. The framework could also be used to map other features of ASM that were not fully explored in this thesis. One area would be to use it to map the shifting networks of labour between different ASM sites and parts of the same country, and regions. During the fieldwork, it was fascinating to find how small-scale miners relied on the networks of family, friends, associates and kinship to find work, and had organically grouped together at mine sites to share in common culture, language and ethnicity despite not previously knowing each other. Examining and tracing these networks would certainly increase understanding of the labour dynamics in ASM. Another clear area for further investigation, given how important this study revealed it to be, is the role of trust and reciprocity in ASM. It would also be a useful endeavour to improve understanding and the capture of quantitative data of financial transactions at the lower levels of supply. This is the type of information that governments will need if they are to be persuaded of the enormous economic value and contribution of the sector to the national economy and job creation and thus place it on an equal, if not, elevated, policy footing with large-scale mining and prioritise activities to formalise it and harness its development potential.

A final, and very clear avenue for further research and development, are the two draft blueprints that were presented in Chapter 6 and outlined in Section 7.2 of this chapter. In order to develop these further for use in policy making, there is a need to draw on, and consult with, other subject matter experts, studies, areas of literature, and understanding of the political, and macro-economy of Ghana's mineral production in order to 'sense check' the ideas being put forward. Once they have been refined further, a clear opportunity exists to share the findings at conferences and international workshops in the presence of key opinion formers and policy makers in order to seek feedback and buy-in, so as to aid in future policy debate and decision making. One very high-profile workshop in this regard is the inaugural *International Conference on Artisanal and Small-scale Mining & Quarrying* (ASM18, 2018). It is being convened by the United Nations Development Programme with support from some of the world's most high-profile multilateral development organisations and international donors including the World Bank, European Union, and African Union, among others. This conference, to be held in Livingstone, Zambia in September 2018, is an opportune time to present findings from the research and seek opportunities for collaboration. With the right level of support, there is certainly the possibility of further research and

development as well as the ability to road-test the Social Production Network in other regional contexts and settings and further refine the methodology.

7.6 Conclusion

Finally, as a point of departure, it is instructive to directly address the research question of this thesis itself, as well as take a step back to reflect on the broader perspective uncovered through this thesis. In order to *provide genuine transformational change for artisanal and small-scale miners in sub-Saharan Africa*, the designers of formalisation and certification initiatives must first seek to better understand and recognise the complex dynamics of ASM activities at the local level. They must look to challenge their own, and others, long-held beliefs, assumptions, and misconceptions regarding the functioning of these networks, and crucially, recognise and seek to harness the invaluable role that middlemen play. With a full understanding of local ASM social production networks and how they interlock with national and international markets, they must seek to participate more with the political and governance processes that keep miners embedded in the informal economy, by drawing on their expansive resources and networks to engage with government and communities of informal small-scale miners. They must be prepared to re-think and reorient their current certification models in order to identify avenues for new partnerships and opportunities with national government institutions, African jewellers, local businesses, and domestic and regional markets for enhancing the value capture and social upgrading in host countries. After all, this is the location of the rightful owners of their mineral resource wealth, the agents of change who should be empowered to harness and benefit the most from their indigenous ASM industry, and to fully realise the significant potential of their sector to act as a springboard for social, economic and national development.

Bibliography

- A.A. Minerals (2018) *Gold Trade and Export*. Available at: <https://www.aaminerals.com/education.html> (Accessed: 11 February 2018)
- Abdulai, A-G. (2017) *The Galamsey Menace in Ghana: A Political Problem Requiring Political Solutions?* Accra: University of Ghana Business School. Working Paper 78.
- Ackah-Baidoo, P. (2016) 'Youth unemployment in resource-rich Sub-Saharan Africa: A critical review', *The Extractive Industries and Society*, 3(1), pp. 249–261.
- Addy, S. (1998) 'Ghana: revival of the mineral sector', *Resources Policy*, 24, pp. 229–239.
- Adjei, O.W., Kyei, P.O., and Afriyie, K., (2014) 'Global Economic Crisis and Socio-Economic Vulnerability: Historical Experience and Lessons from the "Lost Decade" for Africa in the 1980s', *Ghana Studies*, 17, pp. 39–61.
- Adogla-Bessa, D. (2017a) "Citi FM launches #StopGalamseyNow campaign" 3 April. Available at: <http://citifmonline.com/2017/04/03/citifm-launches-stopgalamseynow-campaign/> (Accessed: 29 April 2017)
- Adogla-Bessa, D. (2017b) "BoG, PMMC unable to trace companies in \$2.3bn gold export" 27 September. Available at: <http://citifmonline.com/2017/09/27/bog-pmmc-unable-to-trace-companies-in-2-3bn-gold-export/> (Accessed: 30 October 2017)
- Adogla-Bessa, D. (2017c) "PMMC to replace export licences with secure ones" 28 November. Available at: <http://citifmonline.com/2017/11/28/pmmc-to-replace-export-licenses-with-secure-ones/> (Accessed: 30 December 2017)
- African Minerals Development Centre (2015) *African Women in Artisanal and Small-scale Mining* Accra: African Minerals Development Centre.
- AHCG (Australian High Commission Ghana) (2015) "Ghana and Australia in Partnership to Enhance Minerals Sector Administration in Ghana" 18 June. Available at: <http://ghana.embassy.gov.au/acra/MiningEOLSigningRelease.html> (Accessed: 30 June 2015)
- Aidoo, C. (2015) "FIRST GOLD REFINERY IN GHANA COMMISSIONED". Available at: <http://www.ghana.gov.gh/index.php/media-center/news/1776-first-gold-refinery-in-ghana-commissioned> (Accessed: 9 August 2017)
- Akabzaa, T. and Darimani, A. (2001). *Impact of mining sector investment in Ghana: A study of the Tarkwa mining region*. Accra: Third World Network-Africa Publication.
- Akabzaa, T. (2004) 'African Mining Codes, A race to the Bottom', *African Agenda*, 7(3), pp. 62–63.
- Akabzaa, T. (2009) Constraints to Maximization of Net National Retained Earnings from the Mining Sector: Challenges for National Economic Development and Poverty Reduction in Sub Saharan Africa as Illustrated by Ghana', in Campbell, B.K. (ed.) *Modes of Governance and Revenue Flows in African Mining*. Basingstoke: Palgrave Macmillan, pp. 101–137.
- Alba, E.M. (2009) Extractive Industries Value Chain: A Comprehensive Integrated Approach to Developing Extractive Industries. Extractive industries and development series no. 3. Africa working paper series no. 125. Washington: World Bank.
- Alkire, S. and Robles, G. (2017) *Multidimensional Poverty Index – Summer 2017: Brief Methodological Note and Results*. OPHI (Oxford Poverty & Human Development Initiative) Methodological Note 44. Oxford: University of Oxford.
- Allen, K. (1958) 'Gold Mining in Ghana', *African Affairs*, 57(228), pp. 221–240.

Alpan, S. (1986) 'The role of government in promoting small-scale mining', *Natural Resources Forum*, 10(1), pp. 95–97.

Alsop, R., Bertelsen, M., Holland, J. (2006) *Measuring Empowerment in Practice from Analysis to Implementation*, Washington DC: World Bank.

AMDC (African Minerals Development Centre) (2015) *African Women in Artisanal and Small-scale Mining*, African Minerals Development Centre: African Union and United Nations Economic Commission for Africa.

Amnesty International (2016) *"This is what we die for" Human rights abuses in the Democratic Republic of the Congo power the global trade in cobalt* London: Amnesty International, International Secretariat.

Andrew, J.S. (2003) 'Potential application of mediation to land use conflicts in small-scale mining', *Journal of Cleaner Production*, 11(2), pp. 117–130.

Andrew, J.S. and Hilson, G.M. (2003) 'Land Use Disputes between Small- and Large-Scale Miners: Improving Conflict Management', in Hilson, G.M. (ed.) *The Socio-Economic Impacts of Artisanal and Small-Scale Mining in Developing Countries*. Abingdon: A.A. Balkema, pp. 25–44.

AngloGold Ashanti (2006) *Country Report, Ghana Iduapriem*. Available at: <https://www.unglobalcompact.org/system/attachments/4101/original/COP.pdf?1262614947> (Accessed: 14 February 2017)

AngloGold Ashanti (2011) *Annual Financial Statements 2011*. Available at: <http://www.aga-reports.com/11/financial-statements> (Accessed: 14 February 2017)

AngloGold Ashanti (2012) *2012 Online Sustainability Report*. Available at: <http://www.aga-reports.com/12/downloads/AGA-online-sustainable-development-report.pdf> (Accessed: 14 February 2017)

AngloGold Ashanti (2016) *Operational profile 2016, Iduapriem Ghana*. Available at: <http://www.aga-reports.com/11/financial-statements> (Accessed: 14 February 2017)

AngloGold Ashanti (2017) *Continental Africa*. Available at: <https://www.anglogoldashanti.com/continental-africa/> (Accessed: 4 July 2017)

Argos (2016) *2 mm, 9 carat Gold Wedding Ring*, Argos online catalogue. Available at: <http://www.argos.co.uk/> (Accessed 25 July 2016)

ARM (Alliance for Responsible Mining) (2014a) *When you buy FAIRMINED gold you empower responsible ASM miners and protect the environment*. Available at: <http://www.communitymining.org/en> (Accessed: 25 September 2014)

ARM (Alliance for Responsible Mining) (2014b) *About ARM*. Available at: <http://www.communitymining.org/en/about-arm> (Accessed: 10 April 2014)

ARM (Alliance for Responsible Mining) (2014c) *Fairmined Standard for Gold from Artisanal and Small-Scale Mining, including Associated Precious Metals, Version 2.0*. Available at: <http://www.responsiblemines.org/en/section-fairmined-certification/arm-fairmined-gold> (Accessed: 5 August 2014)

ARM (Alliance for Responsible Mining) (2014d) *Miners FAQ, how long does it take to get FAIRMINED certified?* Available at: <http://www.communitymining.org/en/for-miners/faq> (Accessed: 10 April 2014)

ARM (Alliance for Responsible Mining) (2014e) *How we work with miners* Available at: <http://communitymining.org/en/for-miners/how-we-work-with-miners> (Accessed: 10 April 2014)

ARM (Alliance for Responsible Mining) (2015) *"On the road to Fairmined: Miners show promising results at ARM's workshop in Senegal"* 18 May. Available at: http://www.responsiblemines.org/wp-content/uploads/2017/05/Workshop-Senegal_ENG.pdf (Accessed: 23 June 2015)

ARM (Alliance for Responsible Mining) (2017) *Fairmined Success Stories: Community Profiles*. Available at: <http://www.fairmined.org/community-profiles/> (Accessed: 4 November 2017)

ARM (Alliance for Responsible Mining) (2018) *Fairmined Authorized Suppliers* Available at: <http://www.fairmined.org/wp-content/uploads/2018/01/Fairmined-Authorized-Suppliers.pdf> (Accessed: 11 February 2018)

Armah, F.A. Luginaah, I. and Odoi, J. (2013) 'Artisanal small-scale mining and mercury pollution in Ghana: a critical examination of a messy minerals and gold mining policy', *Journal of Environmental Studies and Sciences*, 3(4), pp. 381–390.

Arnould, E.J. Plastina, A. and Ball, D. (2009) 'Does Fair Trade Deliver on Its Core Value Proposition? Effects on Income, Educational Attainment, and Health in Three Countries', *Journal of Public Policy and Marketing* 28(2), pp. 186–201.

Aryee, B.N.A. (2001) 'Ghana's mining sector: Its contribution to the national economy', *Resources Policy*, 27(2), pp. 61–75.

Aryee, B.N.A. (2012) 'Contribution of the Minerals and Mining Sector to National Development: Ghana's Experiment', *GREAT Insights* 1(5).

Aryee, B.N.A., Ntibery, B.K. and Atorkui, N. (2003) 'Trends in the small-scale mining of precious minerals in Ghana: a perspective on its environmental impact', *Journal of Cleaner Production*, 11(2), pp. 131–140.

Aryee, J.A. (2017) *"PMMC loses license to export gold"* 27 September. Available at: <http://citibusinessnews.com/index.php/2017/09/27/pmmc-loses-license-to-export-gold/> (Accessed: 13 November 2017)

Asap Vasa (2018) *About Us* Available at: <http://euroget-group.com/subsidiaries/euroget-gold-refinery-ltd/> (Accessed: 29 March 2018)

Asiedu, J. (2016) *"Bank of Ghana will sanction exporters who violate new export repatriation rules"* 15 June. Available at: <https://ghanafinancialmarket.wordpress.com/2016/06/15/bank-of-ghana-will-sanction-exporters-who-violate-new-export-repatriation-rules/> (Accessed: 5 July 2017)

ASM (2018) *ASM18 International Conference on Artisanal and Small-scale Mining & Quarrying*. 11–13 September. Livingstone: Zambia. Available at: <http://www.asmconference.org> (Accessed: 28 March 2018)

Atkin, A. (2016) *Charles Sanders Peirce: Pragmatism*. Available at: <https://www.iep.utm.edu/peircepr/> (Accessed: 4 July 2016)

AU (African Union) (2009) *Africa Mining Vision*. Addis Ababa: African Union. Available at: http://www.africaminingvision.org/amv_resources/AMV/Africa_Mining_Vision_English.pdf (Accessed: 16 June 2016)

Aubynn, A. (2009) 'Sustainable solution or a marriage of inconvenience? The coexistence of large-scale mining and artisanal and small-scale mining on the Abosso Goldfields concession in Western Ghana', *Resources Policy*, 34(1–2), pp. 64–70.

Awiah, D.M. (2015) *"Small-scale miners appeal for a reduction in fees"* 26 August. Available at: <https://www.graphic.com.gh/news/general-news/small-scale-miners-appeal-for-reduction-in-fees.html> (Accessed: 21 June 2016)

- Baby Milk Action, (2015). *Baby Milk Action*. Homepage: <http://www.babymilkaction.org/alert-archive> (Accessed: 16 June 2015).
- Bacon, C. (2005) 'Confronting the coffee crisis: Can fairtrade, organic, and specialty coffees reduce small scale farmer vulnerability in Northern Nicaragua?', *World Development*, 33(3), pp. 497–511.
- Bain and Company (2011) *The Global Diamond Industry, Lifting the Veil*. Bain and Company, Inc. and Antwerp World Diamond Centre Private Foundation (AWDC).
- Bain and Company (2014) *The Global Diamond Mining Industry, Portrait of Growth*. Bain and Company, Inc. and Antwerp World Diamond Centre Private Foundation (AWDC).
- Bakia, M. (2014) 'East Cameroon's Artisanal and Small-scale Mining Bonanza: How Long Will it Last?', *Futures*, 62(A), pp. 40–50.
- Baliamoune-Lutz, M. (2011) 'Trust-based social capital, institutions, and development', *The Journal of Socio-Economics*, 40(4), pp. 335–346.
- Balineau, G. (2013) 'Disentangling the Effects of Fair Trade on the Quality of Malian Cotton', *World Development*, 44, pp. 241–255.
- Ballard, C. and Banks, G. (2003) 'Resource wars: The Anthropology of mining', *Annual Review of Anthropology*, 32, pp.287–313.
- Banchirigah, S.M. (2006) 'How have reforms fuelled the expansion of artisanal mining? Evidence from sub-Saharan Africa', *Resources Policy*, 31(3), pp. 165–171.
- Banchirigah, S.M. (2008) 'Challenges with eradicating illegal mining in Ghana: A perspective from the grassroots', *Resources Policy*, 33(1), pp. 29–38.
- Banchirigah, S.M. and Hilson, G. (2010) 'De-Agrarianization, Re-Agrarianization and Local Economic Development: Re-Orientating Livelihoods in African Artisanal Mining Communities', *Policy Sciences*, 43(2), pp. 157–180.
- Bangasser, P.E. (2000) *The ILO and the informal sector: an institutional history*. Employment Paper 2000/09. International Labour Organization 2000. Geneva: ILO
- Bank of Ghana (2016) *Rules on Registration of Export Proceeds* Notice to Banks and the General Public, Notice no. BG/GOV/SEC/2016/03
- Barratt Brown, M. (1993) *Fair Trade: Reform and Realities in the International Trading System* London: Zed Books.
- Barrett, C.B., Reardon, T. and Webb, P. (2001) 'Nonfarm income diversification and household livelihood strategies in rural Africa: concepts, dynamics, and policy implications', *Food Policy*. 26(4), pp. 315–331.
- Barrientos, S. (2013) 'Labour Chains': Analysing the Role of Labour Contractors in Global Production Networks', *The Journal of Development Studies*, 49(8), pp. 1058–1071.
- Barrientos, S.G., Gereffi, G. and Rossi, A. (2011) 'Economic and Social Upgrading in Global Production Networks: A New Paradigm for a Changing World', *International Labour Review*, 150(3–4), pp. 319–340.
- Barry, M. (ed.) (1996) "Regularizing Informal Mining: A Summary of the Proceedings of the International Roundtable on Artisanal Mining" Organised by the World Bank 17–19 May 1995, Industry and Energy Department Occasional Paper No. 6, Washington DC: The World Bank.
- Barume, B., Naeher, U., Ruppen, D. and Schütte, P. (2016) 'Conflict Minerals (3TG): Mining production, applications and recycling', *Current Opinion in Green and Sustainable Chemistry*, 1, pp. 8–12. doi: 10.1016/j.cogsc.2016.07.004

- Basu, N., Clarke, E., Green, A., Calys-Tagoe, B., Chan, L., Dzodzomenyo, M., Fobil, J., Long, R.N., Neitzel, R.L., Obiri, S., Odei, E., Ovadje, L., Quansah, R., Rajaei, M., and Wilson, M. L. (2015) 'Integrated Assessment of Artisanal and Small-Scale Gold Mining in Ghana—Part 1: Human Health Review', *International Journal of Environmental Research and Public Health*, 12(5), pp. 5143–5176.
- Becchetti, L. and Costantino, M. (2008) 'The effects of fair trade on affiliated producers: An impact analysis on Kenyan farmers', *World Development*, 36(5), pp. 823–842.
- Beldad, A., de Jong, M. and Steehouder, M. (2010) 'How shall I trust the faceless and the intangible? A literature review on the antecedents of online trust', *Computers in Human Behaviour*, 26, pp. 857–869.
- Bell, E. and Bryman, A. (2007) 'The Ethics of Management Research: An Exploratory Content Analysis', *British Journal of Management*, 18(1).
- Berg, B.L. (2009) *Qualitative Research Methods For The Social Sciences*. 7th edn., Harlow: Pearson Education Ltd.
- Berman, R.C. and Tyyskä, V. (2011) 'A critical reflection on the use of Translators /Interpreters in qualitative cross-language research project', *International Journal of Qualitative Methods*, 10(2), pp. 178–190.
- Bermúdez-Lugo, O. (2010) *USGS 2008 Minerals Yearbook: Ghana*. Reston, VA: U.S. Geological Survey.
- Bernstein, H. and Campling, L. (2006a) 'Commodity Studies and Commodity Fetishism I: Trading Down', *Journal of Agrarian Change*, 6(2), pp. 239–264.
- Bernstein, H. and Campling, L. (2006b) 'Commodity Studies and Commodity Fetishism II: "Profits with Principles?"', *Journal of Agrarian Change*, 6(3), pp. 414–447.
- Bezençon, V. (2011) 'Producers and the fair trade distribution systems: what are the benefits and problems?', *Sustainable Development*, 19(1), pp. 60–70.
- BGI (Better Gold Initiative) 2017 *About BGI*. Available at: <http://bettergold.org> (Accessed: 22 December 2017)
- BGR (*Bundesanstalt für Geowissenschaften und Rohstoffe*) (2017) *Conflict Minerals*. Available at: https://www.bgr.bund.de/EN/Themen/Min_rohstoffe/CTC/Concept_MC/Conflict-Minerals/cmc_conflict_minerals_node_en.html (Accessed: 4 July 2017)
- Bhargava, V. (2006) *Global Issues for Global Citizens: An Introduction to Key Development Challenges*. Washington, DC: The World Bank
- Biglan, A. (1973) 'The characteristics of subject matter in different academic areas', *Journal of Applied Psychology*, 57(3), pp. 195–203.
- Binns, J. (1982) 'Agricultural change in Sierra Leone', *Geography*, 67(2), pp. 113–125.
- Binns, T. (2006) 'Doing Fieldwork in Developing Countries: Planning and Logistics', in Desai, V. and Potter, R. (2006) (eds.) *Doing Development Research*. London: SAGE Publications, Chapter 2, pp. 13–24.
- Birdsall, N. and Londōno, J.L. (1997) 'Asset Inequality Matters: An Assessment of the World Bank's Approach to Poverty Reduction', *The American Economic Review*, 87(2), pp. 32–37.
- Blackmore, A. and Rivera, J. (2011) 'Producer-level benefits of sustainability certification', *Conservation Biology*, 25(6), pp. 1176–1185.
- Blackmore, E., Holzman, C. and Buxton, A. (2013) *Scaling Up Certification in Artisanal and Small-scale Mining: Innovations for Inclusivity*. London: International Institute of Environment and Development.

- Blaikie, N. (2007) *Approaches to Social Enquiry*. 2nd edn., Advancing Knowledge. Cambridge: Polity Press.
- Blaikie, N. (2010) *Designing Social Research: The Logic of Anticipation*. 2nd edn., Cambridge: Polity Press.
- Bleischwitz, R., Dittrich, M. and Pierdicca, C. (2012) 'Coltan from Central Africa, international trade and implications for any certification', *Resources Policy*, 37(1), pp. 19–29.
- Bloch, R. and Owusu, G. (2012) 'Linkages in Ghana's gold mining industry: Challenging the enclave thesis', *Resources Policy*, 37, pp. 434–442.
- Blois, K. (1999) 'Trust in Business to Business Relationships: An Evaluation of Its Status', *Journal of Management Studies*, 36(2), pp. 197–215.
- Boas and Associates (2015) *GHEITI (Ghana Extractive Industries Transparency Initiative) report on the mining sector 2014*. Ministry of Finance Ghana extractive Industries Transparency Initiative. Accra: Unique Xpressions.
- Bose-O'Reilly, S., Lettmeier, B., Roider, G., Siebert, U. and Drasch, G. (2008) 'Mercury in breast milk – A health hazard for infants in gold mining areas?', *International Journal of Hygiene and Environmental Health*, 211, 5–6, pp. 615–623. doi: 10.1016/j.ijheh.2007.09.015
- Bourke, B. (2014) 'Positionality: Reflecting on the Research Process', *The Qualitative Report* 19(33), pp. 1–9.
- Breul, M. and Diez, J.R. (2018) 'An intermediate step to resource peripheries: The strategic coupling of gateway cities in the upstream oil and gas GPN', *Geoforum*, 92, pp. 9–17.
- Bridge, G. (2008) 'Global production networks and the extractive sector: governing resource based development', *Journal of Economic Geography*, 8(3), pp. 389–419.
- Brooks, A. (2013) 'Stretching Global Production Networks: The International Second-hand Clothing Trade', *Geoforum*, 44, pp. 10–22.
- Brooks, S., Leaver, A., Spence, M., Elliot, C.T., and Dean, M., (2017) 'Pragmatic engagement in a low trust supply chain: Beef farmers' perception of power, trust and agency', *Competition and Change*, 21(2), pp. 114–131.
- Bryceson, D.F. (1999) 'African rural labour, income diversification & livelihood approaches: a long-term development perspective', *Review of African Political Economy*, 26(80), pp. 171–189.
- Bryceson, D.F. and Bank, L. (2001) 'End of an Era: Africa's Development Policy Parallax', *Journal of Contemporary African Studies*, 19(1), pp. 5–23.
- Bryceson, D.F., Jönsson, J.B. and Verbrugge, H. (2013) 'Prostitution or partnership? Wifetypes in Tanzanian artisanal gold-mining settlements', *The Journal of Modern African Studies*, 51(1), pp. 33–56.
- Brydon, L. (2006) 'Ethical Practices in Doing Development Research', in Desai, V. and Potter, R. (2006) (eds.). *Doing Development Research*. London: SAGE Publications, Chapter 3, pp. 25–33.
- Bryman, A. (2004) *Social Research Methods*. 2nd edn., Oxford: Oxford University Press.
- BullionStar (2016) "The World's largest Precious Metals Refineries" Available at: <https://www.bullionstar.com/blogs/bullionstar/the-worlds-largest-precious-metals-refineries/> (Accessed: 10 February 2017)
- BullionStar (2018a) "Indian Gold Market" Available at: <https://www.bullionstar.com/gold-university/indian-gold-market> (Accessed: 12 February 2018).

BullionStar (2018b) "Chinese Gold Market" Available at: <https://www.bullionstar.com/gold-university/chinese-gold-market> (Accessed: 12 February 2018).

Burbidge, D. (2013) 'Trust Creation in the Informal Economy: The Case of Plastic Bag Sellers of Mwanza, Tanzania', *African Sociological Review*, 17(1), pp. 79–103.

Burrell, G. and Morgan, G. (1979) *Sociological Paradigms and Organisational Analysis: Elements of the Sociology of Corporate Life*.

Buur, L., Therkildsen, O., Hansen, M.W. and Kjær, M. (2013) *Extractive Natural Resource Development: Governance, Linkages and Aid*. Copenhagen: DIIS (Danish Institute for International Studies).

Buxton, A. (2013) *Sustainable Markets, Responding to the Challenges of Artisanal and Small-Scale Mining. How Can Knowledge Networks Help?* London: IIED (International Institute of Environment and Development).

Campbell, B. (2001) 'Better resource governance in Africa: on what development agenda?' *Minerals and Energy: Raw Materials Report*, 21(3–4), pp. 3–18.

Campbell, B. (2003) 'Factoring in governance is not enough: Mining codes in Africa, policy reform and corporate responsibility', *Minerals and Energy: Raw Materials Report*, 18(3), pp. 2–13.

Campbell, B. (ed.) (2004) *Regulating mining in Africa: For Whose Benefit?* Uppsala: Nordiska Afrika Institut.

Campbell, B.K. (ed.) (2013) *Modes of Governance and Revenue Flows in African Mining*. London: Palgrave Macmillan.

Carrigan, M., McEachern, M.G., Moraes, C. and Bosangit, C. (2017) 'The Fine Jewellery Industry: Corporate Responsibility Challenges and Institutional Forces Facing SMEs', *Journal of Business Ethics*, 143(4), pp. 681–699.

Carrigan, M., Moraes, C. Bosangit, C. and Ferreira, C. (2015) *Signalling Change: Jewellery SMEs and Corporate Social Responsibility*. Coventry: Coventry University, Centre for Business in Society.

Carstens, J. and Hilson, G. (2009). 'Mining, grievance and conflict in rural Tanzania', *International Development Planning Review*, 31(3), pp. 301–326.

Carswell, G. and De Neve, G. (2013) 'Labouring for global markets: Conceptualising labour agency in global production networks', *Geoforum*, 44, pp. 62–70.

Casley, D.J. and Lury, D.A. 2nd (1987) *Data Collection in Developing Countries*. Oxford: Oxford University Press.

Chachage, C.S.L. (1995) 'The Meek Shall Inherit the Earth but not the Mining Rights: The Mining Industry and Accumulation in Tanzania', in: Gibbon, P. (ed.), *Liberalised Development in Tanzania*. Uppsala: Nordiska Afrika Institut, pp. 37–108.

Chan, M.K. (2013) *Informal Workers in Global Horticulture and Commodities Value Chains: A Review of Literature*. WIEGO (Women in Informal Employment: Globalizing and Organizing). Cambridge, MA: WIEGO. Working Paper 26.

Chen, M.A. (2007) *Rethinking the Informal Economy: Linkages with the Formal Economy and the Formal Regulatory Environment*, Department of Social and Economic Affairs. New York: United Nations. DESA Working Paper 46.

Chen, M.A. (2012) *The Informal Economy: Definitions, Theories and Policies. Women in Informal Employment Globalizing and Organizing*. Cambridge MA: Harvard University. Working Paper No. 1.

- Cherryholmes, C.H. (1992) 'Notes on Pragmatism and Scientific Realism', *Educational Researcher*, 21(6), pp. 13–17.
- Childs, J. (2008) 'Reforming small-scale mining in sub-Saharan Africa: Political and ideological challenges to a Fair Trade gold initiative', *Resources Policy* 33(4), pp. 203–209.
- Childs, J. (2010) 'Fair Trade Gold': A Key to Alleviating Mercury pollution in sub-Saharan Africa', *International Journal of Environment and Pollution*, 41(3–4), pp. 259–271.
- Childs, J. (2014a) 'From 'criminals of the earth' to 'stewards of the environment': The social and environmental justice of Fair Trade gold', *Geoforum*, 57, pp. 129–137.
- Childs, J. (2014b) 'A new means of governing artisanal and small-scale mining? Fairtrade gold and development in Tanzania', *Resources Policy*, 40, pp. 128–136.
- Chilowa, W., (1998) 'The impact of agricultural liberalisation on food security in Malawi', *Food Policy*, 23(6), pp. 553–56.
- Chirico, P.G., Malpeli, K.C., Anum, S. and Phillips, E.C. (2010) *Alluvial Diamond Resource Potential and Production Capacity Assessment of Ghana*. Scientific Investigations Report 2010–5045. Reston, VA: US Geological Survey.
- Choyt, M., (2013) "Fair Trade Organization (FLO) and Alliance for Responsible Mining (ARM) Do Not Renew Contract, splitting the Fairtrade/Fairmined label" [Blog]. 1 April. Available at: <http://www.fairjewelry.org/fair-trade-organization-flo-and-alliance-for-responsible-mining-arm-do-not-renew-contract-splitting-the-fairtradefairmined-label/> (Accessed: 10 April 2014)
- CitiBusiness (2017) "PMMC loses license to export gold" Available at: <http://citibusinessnews.com/index.php/2017/09/27/pmmc-loses-license-to-export-gold/> (Accessed: 13 January 2018)
- Clarke, A. E. (2005) *Situational analysis: Grounded theory after the postmodern turn*. Thousand Oaks, CA: Sage.
- Cleary, D. (1990) *Anatomy of the Amazon of the Gold Rush*. Iowa City: University of Iowa Press.
- Cleveland, T. (2014) *Stones of Contention: A History of Africa's Diamonds*. Africa in World History Series. Ohio: Ohio University Press.
- Clifford, M.J. (2010) 'Potential repercussions of a mercury ban on the artisanal and small-scale mining sector: a viewpoint', *International Journal of Environment and Pollution*, 41(3–4), pp. 229–241.
- Clifford, M.J. (2011) 'pork knocking in the land of many waters: Artisanal and small-scale mining (ASM) in Guyana. *Resources Policy*, 36, pp. 354–362.
- CMI (Chartered Management Institute) (2011). *Setting SMART Objectives Checklist 231*. Available at: <https://www.managers.org.uk/~media/Files/Campus CMI/Checklists PDP/Setting SMART objectives.ashx> (Accessed: 20 February 2018)
- Coakley, G.J. (1997) *The Mineral Industry of Ghana*. Reston, VA: U.S. Geological Survey.
- Coakley, G.J. (2002) *U.S. Geological Survey Minerals Yearbook: The Mineral Industry of Ghana*. Reston, VA: U.S. Geological Survey.
- Coe, N. and Hess, M. (2013) 'Global production networks, labour and development', *Geoforum*, 44(1), pp. 4–9.
- Coe, N.M. (2011) 'Geographies of production II: A global production network A–Z', *Progress in Human Geography*, 36(3), pp. 389–402.

Coe, N.M., Dicken, P. and Hess, M., (2008) 'Global Production Networks: Realizing the potential', *Journal of Economic Geography*, 8(3), pp. 271–295.

Coe, N.M., Kelly, P.F. and Yeung, H.W.-C. (2007) *Economic Geography: A Contemporary Introduction*. Oxford: Blackwell.

Coleman, J. (1988) 'Social Capital in the Creation of Human Capital', *American Journal of Sociology*, 94, pp. 13–39, reprinted in P. Dasgupta and I. Serageldin (eds.), *Social Capital: A Multifaceted Perspective*, Washington, DC: The World Bank, 2000.

Constitution of the Republic of Ghana, 1992 (as Amended in 1996) Available at: http://www.ghana.gov.gh/images/documents/constitution_ghana.pdf (Accessed: 9 March 2015)

CRAFT (2018) *Code of Risk-mitigation for ASM engaging in Formal Trade – Version 1.0 – Draft for First Round of Public Consultation*. Available at: http://www.responsiblemines.org/wp-content/uploads/2018/03/2018-02-26-CRAFT_v1-Draft-for-public-consultation.pdf (Accessed: 30 March 2018)

Crawford, G. and Botchwey, G. (2016) *Conflict, collusion and corruption in small-scale gold mining in Ghana: Chinese miners and the state*. The Hague: International Institute of Social Studies.

Creswell, J.W. (2014) *Research design: Qualitative, Quantitative, and Mixed Method Approaches*. Thousand Oaks, CA: SAGE Publications.

Crisp, B. and Kelly, M. (1999) 'The Socioeconomic Impacts of Structural Adjustment', *International Studies Quarterly* 43, pp. 533–552.

Crisp, J. (1984) *The Story of an African Working Class: Ghanaian Miners' Struggles 1870–1980*. London: Zed Books.

Crispin, G. (2003) 'Environmental Management in small scale mining in PNG', *Journal of Cleaner Production*, 11, pp. 175–183.

Cronk, G. (2016) *George Herbert Mead (1863—1931)*. Available at: <https://www.iep.utm.edu/mead/> (Accessed: 4 July 2016)

Crotty, M. (1998) *The Foundations of Social Research: Meaning and Perspective in the Research Process*. London: SAGE Publications

Curtis, S., Smith, G. and Washburn, S. (2000) 'Approaches to sampling and case selection in qualitative research: examples in the geography of health', *Social Science & Medicine* 50, pp. 1001–1014.

Da Silva-Glasgow, D. (2013) *Global Value Chain Analysis of the Gold Jewellery Industry: Upgrading Trajectories for Guyana*. Institute for Development Studies, University of Guyana Special Series. Working Paper 6/12.

David, W.L. (2004) *The Humanitarian Development Paradigm. Search for Global Justice*. Maryland: University Press of America.

Davidson, J. (1993) 'The transformation and successful development of small-scale mining enterprises in developing countries' *Natural Resources Forum*, 17(4), pp. 315–326.

Davies, G.R. (2013) 'A toxic free future: Is there a role for alternatives to mercury in small-scale gold mining?', *Futures*, (In Press) 2013.

DDI (Diamond Development Initiative) (2016a) *What we do* Available at: <http://www.ddiglobal.org/what-we-do/certification/> (Accessed: 4 June 2016)

DDI (Diamond Development Initiative) (2016b) *Maendeleo Diamond Standards™ Frequently Asked Questions* Available at: <http://www.ddiglobal.org/login/resources/mds-maendeleo-diamond-standards-faqs.pdf> (Accessed: 22 May 2016)

DDI (Diamond Development Initiative) (2016c) *Maendeleo Diamond Standards™ Overview* Available at: <http://www.ddiglobal.org/login/resources/overview-maendeleo-diamond-standards.pdf> (Accessed: 8 July 2016)

DDI (Diamond Development Initiative) (2017) *The Issues: Kimberley Process* Available at: <http://www.ddiglobal.org/artisanal-mining/issues.php> (Accessed: 4 December 2017)

DDI (Diamond Development Initiative) (2018a) *Overview – Transformation*. Available at: <http://www.ddiglobal.org/what-we-do/transformation> (Accessed: 8 January 2018)

DDI (Diamond Development Initiative) (2018b) *Past projects*. Available at: <http://www.ddiglobal.org/what-we-do/past-projects/> (Accessed: 8 January 2018)

DDI (Diamond Development Initiative) (2018c) *Statistics of Artisanal Miners – Democratic Republic of Congo (DRC)*. Available at: <http://www.ddiglobal.org/Registration-2015/> (Accessed: 10 January 2018)

De Soto, H (1989). *The Other Path: The Invisible Revolution in the Third World*. New York: Harper Row.

De Soto, H. (2000) *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else*. New York: Basic Books.

De Soto, H. (2002) *The Other Path: The Economic Answer to Terrorism*. New York: Basic Books.

DELVE (2018). *A global platform for ARTISANAL & SMALL SCALE mining data*. Available at: <http://www.delve-database.org> (Accessed: 13 March 2018)

Denzin, N.K. and Lincoln, Y.S. (eds.) (2005) *The Sage Handbook of Qualitative Research*. 3rd edn., Thousand Oaks, CA: Sage Publications

Desai, V. and Potter, R. (2006) *Doing Development Research*. London: SAGE Publications.

Dicken, P. (2011) *Global Shift: Mapping the Changing Contours of the World Economy*. London: SAGE Publications.

Dickson, K.B. (1969) *A Historical Geography of Ghana*. Cambridge: Cambridge University Press.

Diesing, P. (1966) 'Objectivism vs. Subjectivism in the Social Sciences', *Philosophy of Science*, 33(1/2), pp. 124–133.

DFID (UK Department for International Development) (2018) *Sustainable Development of Mining in Rwanda*. Available at: <http://projects.rw/sdmr/about-us/our-program> (Accessed: 5 January 2018)

Dodd-Frank (2010) *The Dodd-Frank Wall Street Reform and Consumer Protection Act, Section 1502*. Available at: <https://www.sec.gov/answers/about-lawsshtml.html#df2010> (Accessed: 25 September 2014)

Doherty, B., Smith, A. and Parker, S. (2015) 'Fair Trade market creation and marketing in the Global South', *Geoforum*, 67, pp. 158–171.

Doran, G. T. (1981) 'There's a S.M.A.R.T. Way to Write Management's Goals and Objectives', *Management Review*, 70(11), pp. 35–36.

Dos Santos, R.S.P. and Milanez, B. (2015) 'The Global Production Network for Iron Ore: Materiality, Strategies, and Social Contestation in Brazil', *The Extractive Industries and Society*, 2(4), pp. 756–765.

DPA (UK Data Protection Act 1998), Chapter 29 (as Amended) Available at: <https://www.legislation.gov.uk/ukpga/1998/29/contents> (Accessed: 14 November 2014)

Dreschler, B. (2001) *Small-scale Mining and Sustainable Development within the SADC Region*. Report commissioned by the Mining, Minerals and Sustainable Development project (MMSD) of the International Institute for Environment and Development (IIED). London: IIED.

Drucker, D. (1955) *The practice of management*. London: Heinemann.

Dumett, M. (2005) 'Gold: Mining Industry of Ghana: 1800 to the Present' in Shillington, K. (ed.), *Encyclopedia of African History*. London: Taylor & Francis Group. Volume 1(A–G), pp. 586–587.

Echavarria, C. (2008) *Getting to Fair Trade Gold and Jewellery*. Project Engage, Colombia: ARM (Association for Responsible Mining).

Echavarria, C. (2014) *'What is legal?' Formalising artisanal and small-scale mining in Colombia*. Alliance for Responsible Mining and International Institute for Environment and Development (IIED). London: IIED.

ECOWAS (Economic Community of West African States) (2009) *ECOWAS Directive on the Harmonization and Guiding Principles and Policies in the Mining Sector*. Abuja: ECOWAS.

EFTA (The European Fair Trade Association) (2016) *EFTA* Available at: <https://www.newefta.org> (Accessed: 4 August 2016)

EITI (The Extractive Industries Transparency Initiative) (2017) *The global standard for the good governance of oil, gas and mineral resources*. Available at: <https://eiti.org> (Accessed: 7 December 2017)

Elder, S.D., Hisham, Z., and Le Billon, P., (2012). 'Effects of Fair Trade Certification on Social Capital: The Case of Rwandan Coffee Producers', *World Development*, 40(11), pp. 2355–2367.

Ellis, F. (2000) *Rural Livelihoods and Diversity in Developing Countries*. Oxford: Oxford University Press.

Engleshoven, M. (1999) 'Diamonds and Patels: A report on the diamond industry of Surat, *Contributions to Indian Sociology*, 33(1–2), pp. 353–377.

EPA (Environmental Protection Agency Ghana) (2018) *About us*. Available at: <http://www.epa.gov.gh/epa/about> (Accessed: 11 March 2018)

EU (European Union) (2017/821) *Regulation 2017/821 of the European Parliament and of the Council of 17 May 2017 laying down supply chain due diligence obligations for Union importers of tin, tantalum and tungsten, their ores, and gold originating from conflict-affected and high-risk areas*. (Accessed: 29 May 2017)

Euroget Group (2018) *Gold Coast Refinery Ltd*. Available at: <http://euroget-group.com/subsidiaries/euroget-gold-refinery-ltd/> (Accessed: 29 March 2018)

Fair Jewellery Action (2017) *About us*. Available at: <https://fairjewelry.org> (Accessed: 19 November 2017)

Fair Trade Federation (2016) Available at: <http://www.fairtradefederation.org> (Accessed: 4 March 2016)

Fairtrade International (2012) *Home page*. Available at: <http://www.fairtrade.net/361.html> (Accessed: 27 November 2014)

Fairtrade (2015) *Using the Fairtrade Mark*. Available at: www.fairtrade.org.uk/what_is_fairtrade/fairtrade_certification_and_the_fairtrade_mark/the_fairtrade_mark.aspx (Accessed: 4 June 2015)

Fairtrade Africa (2015) *Fairtrade Africa Annual Report 2014–2015*. Nairobi: Fairtrade Africa.

Fairtrade and Fairmined Gold (2014). *Homepage*. http://server-e9-11.hosting.imerja.com/gold/about_us/qa.aspx (Accessed: 25 September 2014).

Fairtrade Foundation (2014) "*Fairtrade Foundation calls on couples to take Fairtrade gold to the next level, helping some of the world's poorest*" Available at: <http://fairtrade.org.uk/en/media-centre/news/september-2014/fairtrade-calls-on-couples-to-take-fairtrade-gold-to-next-level> (Accessed: 10 October 2015)

Fairtrade Foundation (2015) *Fairtrade Gold: an industry briefing, A Fairtrade Foundation Report*. UK: Fairtrade Foundation.

Fairtrade Foundation (2015a) "*FAIRTRADE BRIDAL CAMPAIGN I DO LAUNCHES ON ICONIC STEPS OF ST PAULS CATHEDRAL*" 13 January. Available at: <https://www.fairtrade.org.uk/Media-Centre/News/January-2015/Fairtrade-bridal-campaign-I-DO-launches-on-iconic-steps-of-St-Pauls-Cathedral> (Accessed: 10 October 2015)

Fairtrade Foundation (2015b) *Say 'I Do' to Fairtrade Gold*. [online video]. Available at: <https://www.youtube.com/watch?v=wy6sGaBu5IA> (Accessed: 19 March 2018)

Fairtrade Foundation (2016a) "*Africa's first fairtrade certified gold cooperative offers hope*" 19 October. Available at: <https://www.fairtrade.org.uk/en/media-centre/news/october/africas-first-fairtrade-certified-gold-cooperative-offers-hope> (Accessed: 24 August 2017)

Fairtrade Foundation (2016b) "*ARGOS LEADS THE WAY BY OFFERING FAORTRADE GOLD WEDDING RINGS*" 19 July 2016. Available at: <https://www.fairtrade.org.uk/en/media-centre/news/july-2016/argos-leads-the-way-by-offering-fairtrade-gold-wedding-rings> (Accessed: January 10 2017)

Fairtrade Foundation (2016c) "*FAIRTRADE UNVEILS NATIONWIDE PUSH TO PROMOTE FAIRTRADE GOLD JEWELLERY*" 2 September. Available at: <https://www.fairtrade.org.uk/en/media-centre/news/august-2016/fairtrade-unveils-nationwide-push-to-promote-fairtrade-gold-jewellery> (Accessed: 3 March 2018)

Fairtrade Foundation (2017a) "*LAUNCH OF FAIRTRADE GOLD FROM AFRICA*" 22 September. Available at: <https://www.fairtrade.org.uk/Media-Centre/News/September-2017/Launch-of-Fairtrade-gold-from-Africa> (Accessed: 25 March 2018)

Fairtrade Foundation (2017b) "*INTRODUCING WORLD'S FIRST FAIRTRADE GOLD FROM AFRICA*" 21 September. Available at: <https://www.fairtrade.org.uk/Media-Centre/News/September-2017/Introducing-worlds-first-Fairtrade-gold-from-Africa> (Accessed: 3 March 2018)

Fairtrade Foundation (2017c) *Fairtrade Gold Story*. [Online Video] 15 March. Available at: https://www.youtube.com/watch?time_continue=149&v=jRGj2_Do2CE (Accessed: 4 November 2017)

Fairtrade Foundation (2018a) *Kuapa Kokoo, Ghana*. Available at: <https://www.fairtrade.org.uk/Farmers-and-Workers/Cocoa/Kuapa-Kokoo> (Accessed 10: January 2018).

Fairtrade Foundation (2018b) *Juliana Sampan – Akoma, Ghana*. Available at: <https://www.fairtrade.org.uk/Farmers-and-Workers/Other-products/Juliana-Sampana> (Accessed: 10 January 2018)

Fairtrade Foundation (2018c) *Gold Miners*. Available at: <https://www.fairtrade.org.uk/Farmers-and-Workers/Gold> (Accessed: 11 March 2018)

Fairtrade Gold (2014a) *Q&A how was the standard developed?* Available at: http://server-e9-11.hosting.imerja.com/gold/about_us/qa.aspx (Accessed: 25 September 2014)

Fairtrade Gold (2014b) *Fairtrade Gold* Available at: <http://www.fairgold.org/> (Accessed: 25 September 2014)

Fairtrade Gold (2015) *Fairtrade Gold Producers*. Available at: www.fairgold.org/producers/ (Accessed: 2 January 2015)

Fairtrade Gold (2017) *About us, About Fairtrade Gold & Precious Metals*. Available at: <http://www.fairgold.org/about-us/> (Accessed: 10 November 2017).

Fairtrade International, (2013). *Fairtrade Standard for Gold and Associated Precious Metals for Artisanal and Small-Scale Mining*. Version 1.2. Bonn: Fairtrade Labelling organizations International. Available at: https://www.fairtrade.net/fileadmin/user_upload/content/2009/standards/documents/2015-04-15_EN_Gold-and-Precious_Metals.pdf (Accessed: 6 November 2015)

Fairtrade International (2016) *Annual Report 2015–2016*. London: Fairtrade International.

FAO (Food and Agriculture Organisation of the United Nations) (2003) *Environment and Social Standards, Certification Labelling for Cash Crops*. Rome: Food and Agricultural Organization of the United Nations.

FAO (Food and Agriculture Organization of the United Nations) (2015). *FAOLEX Database*. Available at: <http://faolex.fao.org> (Accessed: 24 October 2016)

Fening, P.A. (2015) 'Design Trends in Gold Jewellery Making in Ghana and Global Cultural Influence', *Journal of Arts and Humanities*, 4(4), pp. 57–62.

Ferring, D., Hausermann, H., and Effah, E. (2016) 'Site specific: Heterogeneity of small-scale gold mining in Ghana', *The Extractives Industry and Society*, 3(1), pp. 171–184. doi: 10.1016/j.exis.2015.11.014

FES (Friedrich-Ebert-Stiftung) (2011) *Structure of the Ghanaian State*. Available at: <http://library.fes.de/pdf-files/bueros/ghana/10504.pdf> (Accessed: 9 February 2014)

Fessy, T. (2010). *"Congo general 'profits from blood gold'"* 10 November. Available at: <http://www.bbc.co.uk/news/world-africa-11722142> (Accessed: 19 March 2018)

Field, R. (2016) *John Dewey (1859–1952)*. Available at: <https://www.iep.utm.edu/dewey/> (Accessed: 4 July 2016)

Fisher, E. (2007) 'Occupying the margins: labour integration and social exclusion in artisanal mining in Tanzania', *Development and Change*, 38(4), pp. 735–760.

Fisher, E. (2018) 'Solidarities at a distance: Extending Fairtrade gold to East Africa' *The Extractive Industries and Society*, 5(1), pp. 81–90.

FLO (Fairtrade International) (2013) *Fairtrade Standard for Gold and Associated Precious Metals for Artisanal and Small-Scale Mining*. Bonn: Fairtrade International.

FLO (Fairtrade International) (2016). *Driving Sales, Deepening Impact, Annual Report 2015–2016*. Fairtrade International. Available at: <https://annualreport15-16.fairtrade.net/en/> (Accessed 10 January 2018).

FLO (Fairtrade International), (2017) *Fairtrade Gold*. Available at: <http://wordpress.p20126.webspaceconfig.de/producers/> (Accessed: 10 January 2016).

FLOCERT (2016) *About us*. Available at: <https://www.flocert.net/about-flocert/> (Accessed: 19 March 2017)

Fold, N., Jønsson, J.B. and Yankson, P. (2013) 'Buying into Formalization? State Institutions and Interlocked Markets in African Small-scale Gold Mining', *Futures*, 62(A), pp. 128–139.

Foreign Office (2014) *Foreign Travel Advice – Ghana*. Available at: <https://www.gov.uk/foreign-travel-advice/ghana> (Accessed: 18 November 2014).

- Franks, D., (2016) *With metal prices down, which minerals will pave Africa's development?* United Nations Development Programme Africa. Available at: <http://www.africa.undp.org/content/rba/en/home/ourperspective/ourperspectivearticles/2016/02/08/with-metal-prices-down-which-minerals-will-pave-africa-s-development.html> (Accessed: 10 January 2018).
- Frankel, T.C. (2016) *The Cobalt Pipeline Tracing the path from deadly hand-dug mines in Congo to consumers' phones and laptops*. Available at: <https://www.washingtonpost.com/graphics/business/batteries/congo-cobalt-mining-for-lithium-ion-battery/> (Accessed: 6 March 2018).
- Fraser, A. (2005) 'Poverty Reduction Strategy Papers: Now Who Calls the Shots?', *Review of African Political Economy*, 32(104/105), pp. 317–340.
- Freire, P. (1970) *Pedagogy of the Oppressed*, 30th Anniversary Edition (2005). New York: The Continuum International Publishing Group Inc.
- Fridell, G. (2004) 'The Fair Trade Network in Historical Perspective', *Canadian Journal of Development Studies*, 25, pp. 411–428.
- Fridell, G. (2006) 'Fair Trade and Neoliberalism, Assessing Emerging Perspectives', *Latin American Perspectives*, 33(6), pp. 8–28.
- Fritz, M., McQuilken, J., Collins, N., Weldegiorgis, F., (2018). *Global Trends in Artisanal and Small-Scale Mining (ASM): A review of key numbers and issues*. Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF). Winnipeg: IISD.
- Furtado, C. (1976) *Economic development of Latin America*. 2nd edn. Cambridge: Cambridge University Press.
- Geenen, S., (2011) 'Relations and regulations in local gold trade networks in SouthKivu, DR Congo', *Journal of Eastern African Studies*, 5(3), pp. 427–446
- Geenen, S. (2012) 'A Dangerous Bet: The Challenges of Formalizing Artisanal Mining in the Democratic Republic of Congo', *Resources Policy*, 37(3), pp. 322–330.
- Geenen, S. (2015) *African Artisanal Mining from the Inside Out: Access, norms and power in Congo's gold sector*. London: Routledge.
- Geenen, S. (2018) 'Underground dreams. Uncertainty, risk and anticipation in the gold production network', *Geoforum*, 91, 30–38.
- Geertz, C. (1973) *The interpretation of cultures*. New York: Basic Books.
- Geertz, C. (1980) 'Blurred Genres: The Refiguration of Social Thought', *American Scholar*, 49, pp. 165–79.
- Gereffi, G. (1994) "The Organization of Buyer-driven Global Commodity Chains: How US Retailers Shape Overseas Production Networks", in Gereffi, G. and Korzeniewicz, M. (eds.) *Commodity Chains Global Capitalism*. Westport CT: Praeger, pp. 95–122.
- Gereffi, G. (1999) 'International Trade and Industrial Upgrading in the Apparel Commodity Chain', *Journal of International Economics*, 48, pp. 37–70.
- Gereffi, G. (2005) "The Global Economy: Organization, Governance, and Development", in Smelser, N.J. and Swedberg, R. (eds.) *The Handbook of Economic Sociology*. New Jersey: Princeton University Press, pp. 160–182.

Gereffi, G., Humphrey, J. and Sturgeon, T. (2005) 'The Global Governance of Value Chains', *Review of International Political Economy*, 12(1) pp. 78–104.

GCDL (Great Consolidated Diamonds Ghana Ltd.s Ltd.) (2011) *Tributer Mining System*. Unpublished Company Document. Accra: Great Consolidated Diamonds Ghana Ltd.

GCDL (Great Consolidated Diamonds Ghana Ltd.) (2016) *About Us*. Available at: http://gcdgl.com/cat_select.php?linkID=1 (Accessed: 15 June 2016)

Ghana, Minerals and Mining Act, 2006 (Act 703)

Ghana, Minerals and Mining (Amendment) Act 2015

Ghana, Minerals and Mining Law, 1986

Ghana, Minerals and Mining Policy of Ghana 2014

Ghana, Minerals Commission Act, 1993 (Act 450). Ghana. (as Amended) Available at: <http://laws.ghanalegal.com/acts/id/170/minerals-commission-act> (Accessed: 12 March 2016)

Ghana, Minerals Development Fund Act, 2016

Ghana, Precious Minerals Marketing Corporation Law, 1989 (PNDCL 219)

Ghana Chamber of Mines (2011) *Performance of the Mining Industry in 2011*. Accra: Ghana Chamber of Mines.

Ghana Chamber of Mines (2013) *Performance of the Mining Industry in 2013*. Accra: Ghana Chamber of Mines.

Ghana Chamber of Mines (2014) *Report on the Performance of the Mining Industry (2014)*. Accra: Ghana Chamber of Mines.

Ghana Chamber of Mines (2016) *Performance of the Mining Industry in 2016*. Accra: Ghana Chamber of Mines.

Ghana Legal (2015) *Home page*. Available at: <http://cases.ghanalegal.com> (Accessed: 21 June 2016)

Ghana Statistical Service (2014a) *2010 Population and Housing Census, District Analytical Report, Denkyemba District*. Accra: Ghana Statistical Service.

Ghana Statistical Service (2014b) *2010 Population and Housing Census, District Analytical Report, Tarkwa Nsuaem Municipality*. Accra: Ghana Statistical Service.

GhanaWeb (2015) *"Small Scale Miners angry with EPA over permit fees"*. 27 August. Available at: <https://www.ghanaweb.com/GhanaHomePage/business/Small-Scale-Miners-angry-with-EPA-over-permit-fees-378074> (Accessed: 21 June 2016)

GhanaWeb (2018) *District Assemblies*. Available at: https://www.ghanaweb.com/GhanaHomePage/republic/district_assemblies.php (Accessed: 10 January 2018).

Gibb, M. (2006) 'Artisanal and small-scale mining in West Africa: an overview of sustainable development and environmental issues', in: Hilson, G. (ed.) *Small-scale Mining, Rural Subsistence and Poverty in West Africa*. Rugby: Practical Publishing.

Gibbon, P. and Ponte, S. (2005) *Trading Down: Africa, Value Chains, and the Global Economy*. Philadelphia: Temple University Press.

Giovannucci, D. (2001) *Sustainable coffee survey of the North American speciality coffee industry*. Long Beach, CA: Speciality Coffee Association of America.

Giovannucci, D. and Koekoek, F.J. (2003) *The state of sustainable coffee: a study of twelve major markets*. Winnipeg, Canada: International Institute of Sustainable Development, and London: International Coffee Organization.

Giovannucci, D. and Ponte, S. (2005) 'Standards as a new form of social contract? Sustainability initiatives in the coffee industry', *Food Policy*, 30(3), pp. 284–301.

Glaser, B.G. and Strauss, A.L. (1967) *The Discovery of Grounded Theory: Strategies for Qualitative Research*. New Brunswick: Aldine.

Global Witness (2010) *Do No Harm: Excluding conflict minerals from the supply chain*. London: Global Witness. Available at: https://www.globalwitness.org/sites/default/files/pdfs/do_no_harm_global_witness.pdf (Accessed: 11 May 2016)

GlobeScan (2015) *Fairtrade International GlobeScan Consumer Study 2015, Global Findings – Guide to Shareable Data 2015*. GlobeScan. Available at: http://www.fairtradeafrica.net/wp-content/uploads/2010/07/Fairtrade_2015_Global-data-for-sharing.pdf (Accessed February 2018).

GNA (Ghana News Agency) (2015) "Small scale miners condemns arbitrary EPA permit fees" 27th August. Available at: <http://www.ghananewsagency.org/social/small-scale-miners-condemns-arbitrary-epa-permit-fees-93641> (Accessed: 4 November 2016)

Gold Coast Refinery (2018). Gold Coast Refinery <http://goldcoastrefinery.com/> (Accessed: 5 January 2018)

Gold Fields (2009) Tarkwa Gold Mine: *Technical Short Form Report*. Available at: https://www.goldfields.com/reports/rr_2009/tech_tarkwa.php (Accessed: 9 June 2016)

Gold Fields (2010) Tarkwa Gold Mine: *Technical Short Form Report*. Available at: https://www.goldfields.com/reports/goldfields_rr_dec2010/pdf/tarkwa.pdf (Accessed: 9 June 2016)

Gold Fields (2015) 'Analysts Site Visit, Tarkwa Team'. 18 May. Available at: <https://www.goldfields.com/pdf/investors/presentation/2015/west-africa-analyst-visit-may-2015/presentation-18-may.pdf>

Gold Fields (2016) *Integrated Annual Report 2016*. Available at: https://www.goldfields.com/reports/annual_report_2016/integrated/community-relations-and-creating-shared-value.php (Accessed: 19 June 2017)

Gold Fields (2018a) "Gold Fields Ghana opts for contract mining at Tarkwa mine". 5 January. Available at: https://www.goldfields.com/news_article.php?articleID=5720 (Accessed: 12 February 2018)

Gold Fields (2018b) *Brief history of Tarkwa*. Available at: <https://www.goldfields.com/tarkwa.php> (Accessed: 12 February 2018)

Gold Fields (2018c) *Our History*. Available at: <https://www.goldfields.com/our-history.php> (Accessed: 12 February 2018)

Goldman, L., Pendergrass, J., Roche, D., Subramanian, N. and Amsalem, J. (2014) *Artisanal and Small-Scale Gold Mining in Nigeria: Recommendations to Address Mercury and Lead Exposure*. Washington DC: Environmental Law Institute.

Goodman, M.K. (2010) 'The mirror of consumption: Celebrityization, developmental consumption and the shifting cultural politics of fair trade', *Geoforum*, 41(1), pp. 104–116.

Gough, K.V. and Yankson, P.W.K. (2012) 'Exploring the connections: mining and urbanisation in Ghana', *Journal of Contemporary African Studies* 30(4), pp. 651–668. doi: 10.1080/02589001.2012.724867

Government of Rwanda (2010) *The Rwanda Policy of Mines and Geology 2010*, Republic of Rwanda.

Granovetter, M. (1973) 'The Strength of Weak Ties', *American Journal of Sociology*, 78, pp. 1360–1380.

Granovetter, M. (1985) 'Economic Action and Social Structure: The Problem of Embeddedness', *American Journal of Sociology*, 91, pp. 481–510

Grant, A. (2005) 'Diamonds, Foreign Aid, and the Uncertain Prospects for Post-Conflict Reconstruction in Sierra Leone: The Round Table', *The Commonwealth Journal of International Affairs*, 94, pp. 443–457.

Grätz, T. (2004) 'Gold trading networks and the creation of trust: A case-study from Northern Benin', *Journal of the International Africa Institute*, 74(2), pp. 146–172.

Grätz, T. (2009) 'Moralities, risk and rules in West African artisanal gold mining communities: A case study of Northern Benin', *Resources Policy*, 43(1–2), pp. 2–17.

Gray, A. (2017) "Countries are announcing plans to phase out petrol and diesel cars. Is yours on the list?" 26 September. World Economic Forum. Available at: <https://www.weforum.org/agenda/2017/09/countries-are-announcing-plans-to-phase-out-petrol-and-diesel-cars-is-yours-on-the-list/> (Accessed: 14 March 2018)

Green, M. and Hulme, D. (2005) 'From correlates and characteristics to causes: thinking about poverty from a chronic poverty perspective', *World Development*, 33(6), pp. 867–879.

Greenhalgh, P. (1985) *West African Diamonds 1919–83: An Economic History*. Manchester: Manchester University Press.

Greenwood, M. and Van Buren III, H.J. (2010) 'Trust and Stakeholder Theory: Trustworthiness in the Organisation–Stakeholder Relationship', *Journal of Business Ethics*, 95(30), 425–438.

Grix, J. (2002) 'Introducing Students to the Generic Terminology of Social Research', *Politics*, 22(3), pp. 175–186.

GSD (Geological Survey Department) (2015) *Background, mission, vision, functions*. [A3 Welcome poster]. Geological Survey Department, Accra.

Guba, E. G. and Lincoln, Y. S. (1994) 'Competing paradigms in qualitative research', in Denzin, N.K. and Lincoln, Y.S. (eds.) *Handbook of qualitative research*. Thousand Oaks, CA: Sage, pp. 105–107.

Guéniat, M. and White, N. (2015) *A Golden Racket: The True Source of Switzerland's "Togolese" Gold*. A Berne Declaration Investigation. Available at: https://www.publiceye.ch/fileadmin/files/documents/Rohstoffe/BD_2015_Investigation-Gold.pdf (Accessed: 19 November 2017)

Gunson, A.J., Thompson, M., Baker, R., Veiga, M., Spiegel, S. and Cannon, M. (2006) *Environmental and Health Assessment Report: Removal of Barriers to the Introduction of Cleaner Artisanal Gold Mining and Extraction Technologies*. Global Mercury Project Report, Vienna: United Nations Industrial Development Organization.

Haselip, J. and Hilson, G. (2005) 'Winners and losers from industry reforms in the developing world: experiences from the electricity and mining sectors', *Resources Policy*, 30(2), pp. 87–100.

Heeks, R. (1998). *Small Enterprise Development and the 'Dutch Disease' in a Small Economy: The Case of Brunei*. Manchester: University of Manchester, Institute for Development Policy and Management. Discussion Paper No. 56.

- Hemmert, M., Kim, D., Kim, J., and Cho, B.Y., (2016) 'Building the supplier's trust: Role of institutional forces and buyer firm practices' *International Journal of Production Economics*, 180(C), pp. 25–37.
- Henderson, J., Dicken, P., Hess, M., Coe, N. and Yeung, H.W-C. (2002) 'Global production networks and the analysis of economic development', *Review of International Political Economy*, 9(3), pp. 436–464.
- Hentschel, T., Hruschka, F. and Priester, M. (2002) *Global report on Artisanal and Small-Scale Mining*, Mining, Minerals and Sustainable Development (MMSD) Project. London: International Institute for Environmental Development (IIED).
- Hentschel, T., Hruschka, F. and Priester, M. (2003) *Artisanal and Small-Scale Mining: Challenges and Opportunities*. London: International Institute for Environment and Development.
- Hidrón, C. and Koepke, R. (2014) *Addressing Forced Labor in Artisanal and Small Scale Mining (ASM), A Practitioner's Toolkit*, Envigado: Alliance for Responsible Mining.
- Hilson, C. (2006) 'Poverty and economic development in West Africa: a historical analysis', in Hilson, G.M. (ed.) *Small-Scale Mining, Rural Subsistence and Poverty in West Africa*. Rugby: Intermediate Technology Publications Ltd, pp. 13–23.
- Hilson, G. (2001) 'A Contextual Review of the Ghanaian Small-scale Mining Industry', *Minerals Mining and Sustainable Development*, 76, pp. 1–29
- Hilson, G. (2002a) 'Small-scale mining and its socio-economic impact in developing countries', *Natural Resources Forum*, 26, (1).
- Hilson, G. (2002b) 'An overview of land use conflicts in mining communities', *Land Use Policy*, 19(1), pp. 65–73.
- Hilson, G. (2002c) 'Harvesting mineral riches: 1000 years of gold mining in Ghana', *Resources Policy*, 28, pp.13–26
- Hilson, G. (2002d) 'The future of small-scale mining: environmental and socioeconomic perspectives', *Futures*, 34, pp. 9–10.
- Hilson, C.J. (2006) 'Poverty and economic development in West Africa: a historical analysis', in Hilson, G.M. (ed.) *Small-Scale Mining, Rural Subsistence and Poverty in West Africa*. Rugby: Intermediate Technology Publications Ltd, pp. 13–23.
- Hilson, G. (2007). 'What is wrong with the Global Support Facility for small-scale mining?', *Progress in Development Studies*, 7(3), pp. 235–249.
- Hilson, G. (2008a) 'Fair trade gold': Antecedents, Prospects and Challenges', *Geoforum*, 39(1), pp. 386–400.
- Hilson, G. (2008b) 'Mining and rural development: the trajectory of diamond production in Ghana', in Vlassenroot, K. and Van Bockstael, S. (eds.) *Artisanal diamond mining perspectives and challenges*. Egmont: Academia Press.
- Hilson, G. (2008c) 'A load too heavy': Critical Reflections on the child labor problem in Africa's small-scale mining sector', *Children and Youth Services Review*, 30(11), pp. 1233–1245
- Hilson, G. (2009) 'Small-scale mining, poverty and economic development in sub-Saharan Africa: An overview', *Resources Policy*, 34(1–2), pp. 1–5.
- Hilson, G. (2010) '“Once a Miner, Always a Miner”: Poverty and Livelihood Diversification in Akwatia, Ghana', *Journal of Rural Studies*, 26(3): 296–307.

Hilson G.M. (2010) 'Challenges with Eradicating Child Labour in the Artisanal Mining Sector: Experiences from Northern Ghana', *Journal of Community Practice*, 41(3), pp. 445–473.

Hilson, G. (2011) 'Artisanal Mining, Smallholder Farming and Livelihood Diversification in Rural sub-Saharan Africa: An introduction', *Journal of International Development*, 23(8), pp. 1031–1041.

Hilson, G. (2012) 'Poverty traps in small-scale mining communities: the case of sub-Saharan Africa', *Canadian Journal of Development Studies/Revue canadienne d'études du développement*, 33(2), pp. 180–197.

Hilson, G. (2013) '"Creating" Rural Informality: The Case of Artisanal Gold Mining in Sub-Saharan Africa', *The SAIS Review of International Affairs*, 33(1), pp. 51–64.

Hilson, G. (2014) '"Constructing' Ethical Mineral Supply Chains in sub-Saharan Africa: The Case of Malawian Fair Trade rubies', *Development and Change*, 45(1), pp. 53–78.

Hilson, G. (2016a) *Development Minerals in Africa, the Caribbean and the Pacific, Background Study 2016*. ACP-EU Development Minerals Programme. Brussels: United Nations Development Programme.

Hilson, G. (2016b) 'Farming, Small-Scale Mining and Rural Livelihoods in sub-Saharan Africa: A Critical Overview', *The Extractive Industries and Society*, 3(2), pp. 547–563.

Hilson, G. (2017a) 'Why is there a Large-Scale Mining 'Bias' in Sub-Saharan Africa? Land Use Policy

Hilson, G. (2017b) 'Shootings and Burning Excavators: Some Rapid Reflections on the Government of Ghana's Handling of the Informal Galamsey Mining 'Menace'', *Resources Policy*, 54, pp. 109–116.

Hilson, G. (2017c) Foreword, in (ed.) *The Story of an African Working Class: Ghanaian Miners' Struggles 1870–1980*. Crisp, J., (1984). London: Zed Books. [E-book edition]. Available at: https://books.google.co.uk/books?id=43tjDgAAQBAJ&printsec=frontcover&source=gbs_atb#v=onepage&q&f=false (Accessed: 10 January 2018).

Hilson, G. and Clifford, M.J. (2010) 'A 'Kimberley protest': diamond mining, export sanctions, and poverty in Akwatia, Ghana', *African Affairs*, 109(436), pp. 431–450.

Hilson, G. and Garforth, C.J. (2012). 'Agricultural Poverty' and the Expansion of Artisanal Mining in Sub-Saharan Africa: Experiences from Southwest Mali and Southeast Ghana', *Population Research and Policy Review*, 31(3), pp. 435–464.

Hilson, G. and Garforth, C.J. (2013) 'Everyone now is concentrating on the mining: Drivers and implications of rural economic transition in the eastern region of Ghana', *The Journal of Development Studies*, 49(3), pp. 348–364.

Hilson, G. and Hilson, A. (2015) *Entrepreneurship, poverty and sustainability: critical reflections on the formalization of small-scale mining in Ghana*. London: International Growth Centre.

Hilson, G. and Maconachie, R. (2017) 'Formalising artisanal and small-scale mining: insights, contestations and clarifications', *Area*, 49(4), pp. 443–451. doi: 10.1111/area.12328

Hilson, G. and Maponga, O. (2004) 'How has a shortage of census and geological information impeded the regularization of artisanal and small-scale mining?', *Natural Resources Forum* 28(1), pp. 22–33.

Hilson, G. and McQuilken, J. (2014) 'Four decades of support for artisanal and small-scale mining in sub-Saharan Africa: A critical review', *The Extractive Industries and Society*, 1(1), pp. 104–118.

Hilson, G. and McQuilken, J.T. (2016) 'Ethical Mineral Production: Impacts and Limitations in Latin America and Beyond.' in (eds.) Deonandan, K. and Dougherty, M.L. (2016) *Mining in Latin America, Critical Approaches to the "New Extraction"*. UA Press.

Hilson, G. and McQuilken, J. (2017) 'Moving overseas? Critical reflections on the implementation of Latin American ethical gold schemes in sub-Saharan Africa', in Deonandan, K., and Dougherty, M.L. (eds.), Chapter 10, *Mining in Latin America, Critical approaches to the new extraction*, London: EarthScan from Routledge.

Hilson, G. and Okoh, G. (2013) 'Artisanal and Small-Scale Mining in Ghana: Institutional Arrangements, Resource Flows and Poverty Alleviation', in Campbell, B. (2013) (ed.), *Modes of Governance and Revenue Flows in African Mining*. Basingstoke: Palgrave Macmillan.

Hilson, G. and Osei, L. (2014) 'Tackling youth unemployment in sub-Saharan Africa: is there a role for artisanal and small-scale mining', *Futures*, 62 (Part A), pp. 83–94.

Hilson, G. and Pardie, S. (2005) 'Structural Adjustment and Subsistence Industry: Artisanal Gold Mining in Ghana', *Development and Change*, 36(1), pp. 103–131.

Hilson, G. and Pardie, S. (2006) 'Mercury: An agent of poverty in Ghana's small-scale gold-mining sector?', *Resources Policy*, 31(2), pp. 106–116.

Hilson, G. and Potter, C. (2003) 'Why is illegal gold mining activity so ubiquitous in rural Ghana?', *African Development Review*, 15(2), pp. 237–270.

Hilson, G. and Potter, C. (2005) 'Structural Adjustment and Subsistence Industry: Artisanal Gold Mining in Ghana', *Development and Change*, 36(1), pp. 103–131.

Hilson G. and Van Bockstael G. (2011) 'Diamond Mining, Rice Farming and a "Maggi Cube": A Viable Poverty Alleviation Strategy in Rural Liberia', *Journal of International Development*, 23(8), pp. 1042–1053.

Hilson, G. and Van Bockstael, S. (2012) 'Poverty and Livelihood Diversification in Rural Liberia: Exploring the Linkages Between Artisanal Diamond Mining and Smallholder Rice Production', *Journal of Development Studies*, 48(3), pp. 416–431.

Hilson, G. and Vieira, R. (2007). 'Challenges with minimising mercury pollution in the small-scale gold mining sector: Experiences from the Guianas', *International Journal of Environmental Health Research*, 17(6), pp. 429–441.

Hilson, G. and Yakovleva N. (2007) 'Strained relations: A critical analysis of the mining conflict in Prestea, Ghana', *Political Geography*, 26(1), pp. 98–119.

Hilson, G., Amankwah, R. and Ofori-Sarpong, G. (2013) 'Going for gold: Transitional livelihoods in Northern Ghana', *The Journal of Modern African Studies*, 51(1), pp. 109–137.

Hilson, G., Hilson, A. and Adu-Darko, E. (2014) 'Chinese participation in Ghana's informal gold mining economy: Drivers, implications and clarifications', *Journal of Rural Studies*, 34, pp. 292–303.

Hilson, G., Hilson, A. and McQuilken, J. (2016) 'Ethical Minerals Fairer Trade for Whom?', *Resources Policy*, 49, pp. 232–247. doi: 10.1016/j.resourpol.2016.05.002

Hilson, G., Hilson, A., Maconachie, R., McQuilken, J. and Goumandakoye, H. (2017) 'Artisanal and Small-Scale Mining (ASM) in Sub-Saharan Africa: Re-conceptualizing Formalization and 'Illegal' Activity', *Geoforum*, 83, pp. 80–90.

Hilson, G., Hilson, C. J. and Pardie, S. (2007) 'Improving awareness of mercury pollution in small-scale gold mining communities: challenges and ways forward in rural Ghana', *Environmental Research*, 103(2), pp. 275–287.

Hinton, J. (2005). *Communities and small-scale mining: an integrated review for development planning*. Communities and Small-Scale Mining (CASM) Initiative. Washington DC: The World Bank.

Hinton, J., Levin, E., Okedi, J.P., Surma, A. and Villegas, C. (2010) *Comparative Study: Legal and Fiscal Regimes for Artisanal Diamond Mining*. Burlington: Prepared by Tetra Tech for USAID.

Hinton, J.J., Veiga, M.M. and Beinhoff, C. (2003) 'Women and Artisanal Mining: Gender Roles and the Road Ahead', in Hilson, G. (ed) *The Socio-Economic Impacts of Artisanal and Small-Scale Mining in Developing Countries*. Netherlands: Balkema, Swets Publishers, pp. 161–204.

Hirons, M. (2013) 'Mining in Ghana's forests: cross-sectoral linkages and the prospects for REDD', *International Development Planning Review*, 35(3), pp. 283–302.

Hirschman, A.O. (1958) *The Strategy of Economic Development*. New Haven: Yale University Press.

Hirway, I. (2009) *Losing the Sparkle: Impact of the Global Crisis on the Diamond Cutting and Polishing Industry, in India*. [ebook] India: UNDP India, pp.1–54. Available at: http://www.in.undp.org/content/dam/india/docs/diamond_final.pdf

Höhmman, H. and Welter, F. (2004) *Trust and Entrepreneurial behaviour: Entrepreneurial Strategies and Trust, Structure and Evolution of Entrepreneurial Behavioural Patterns in Low Trust and High Trust Environments of East and West Europe*. Working Paper 54. Bremen: Research Centre for European Studies.

Holden, M.T. and Lynch, P. (2004) 'Choosing the Appropriate Methodology: Understanding Research Philosophy', *Marketing Review*, 4(4), pp. 397–409.

Home Retail Group (2015) *Annual Reports and Financial Statements 2015*. Home Retail Group. Available at: http://www.annualreports.com/HostedData/AnnualReportArchive/h/LSE_HOME_2015.pdf (Accessed: 12 January 2016).

Hopkins, T.K. and Wallerstein, I. (1986) 'Commodity Chains in the World Economy prior to 1800, *Review*, 10(1), pp. 157–170.

House, E.R. (1991) 'Realism in Research', *Educational Researcher*, 20(6), pp. 2–9.

Hudson, I., Hudson, M. and Fridell, M. (2013) *Fair Trade, Sustainability and Social Change*. London: Palgrave Macmillan.

Hughes, A., McEwan, C. and Bek, D. (2015) 'Mobilizing the ethical consumer in South Africa', *Geoforum*, 67, pp. 148–157.

Hughes, A., Wrigley, N. and Buttle, M. (2008) 'Global Production Networks: Ethical Campaigning, and the Embeddedness of Responsible Governance', *Journal of Economic Geography*, 8(3), pp. 345–467.

Human Rights Watch (2015). *Precious Metal and Cheap Labor: Child Labor and Corporate Social Responsibility in Ghana's Artisanal Gold Mines*. New York: Human Rights Watch.

Humphrey, J. and Schmitz, H. (2001) Governance in global value chains. *IDS Bulletin*, 32(3), 19–29.

Hunt, D. (1989). *Economic Theories of Development: An Analysis of Competing Paradigms*. London: Harvester Wheatsheaf.

Hunter, M. and Smith, A. (2017) *Follow the Money: Financial Flows linked to Artisanal and Small-Scale Mining in Sierra Leone*. The GIFF Project. Available at: <http://www.levinsources.com/assets/pages/Follow-the-Money-Case-Study-Illicit-Financial-Flows-IFFs-Gold-in-Sierra-Leone.pdf> (Accessed: 10 March 2018)

Ibrahim, S. (2015) "Artisanal Mining in Sudan - Opportunities, Challenges and Impacts", *UNCTAD 17th Africa OILGASMINE conference*, Khartoum, 23rd–26th November 2015. Available at: <http://unctad.org/meetings/es/Presentation/17OILGASMINE%20Mohamed%20Sulaiman%20Ibrahim%20S4.pdf> (Accessed: 4 May 2016)

Ibrahim, S. and Alkire, S., (2007). 'Agency and Empowerment: A Proposal for Internationally Comparable Indicators', *Oxford Development Studies*, 35(4), pp. 379–403.

ICMM (International Council on Mining and Metals) (2015) *Mining in Ghana – What future can we expect?* Mining: Partnerships for Development report. London: ICCM.

IGF (Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development) (2017a) *Guidance for Governments: Managing artisanal and small-scale mining*. Winnipeg: The International Institute for Sustainable Development.

IIED (2017) *'The time is right' for dialogue about sustainable ASM in Tanzania*. Available at: <https://www.iied.org/time-right-for-dialogue-about-sustainable-asm-tanzania> (Accessed: 19 November 2017)

ILO (International Labour Organization) (1999) *Social and Labour Issues in Small-scale Mines*. Report for discussion at the Tripartite Meeting on Social and Labour Issues in Small-scale Mines, International Labour Organization, Sectoral Activities Programme. Geneva: International Labour Office.

IMF (International Monetary Fund) (2003) *An Agenda for Growth and Prosperity*. Washington DC: IMF. Available: http://siteresources.worldbank.org/GHANAEXTN/Resources/Ghana_PRSP.pdf (Accessed: 8 November 2017)

IMF (International Monetary Fund) (2014) International Monetary Fund Fact Sheet. Poverty Reduction Strategy Paper, Washington DC: IMF Communications Department.

IOMC (Inter-organization Programme for the Sound Management of Chemicals) (2015) *Protecting People and the Environment in Artisanal and Small Scale Gold Mining (ASGM): IOMC Assistance to Governments and Communities*. Available at: http://www.who.int/iomc/IOMC_ASGM_flyer_April2015.pdf (Accessed: 4 June 2017)

Jacobs, J. (2013) 'An Overview of Revenue Flows from the Mining Sector: Impacts, Debates and Policy Recommendations', in Campbell, B.K. (ed.) *Modes of Governance and Revenue Flows in African Mining*. Basingstoke: Palgrave Macmillan, pp. 16–46.

Jafaru, M.Y. (2017) *"Withdraw licence of Great Consolidated Diamonds Ghana Limited – MPs"*. 22 December. Available at: <https://www.graphic.com.gh/news/politics/withdraw-licence-of-great-consolidated-diamond-ghana-limited-mps.html> (Accessed: 10 February 2018)

Janse, A. (2007) 'Global Rough Diamond Production since 1870', *Gems and Gemology* 43(2);, pp. 98–119.

Jennings, N.S. (2003) 'Addressing labour and social issues in small-scale mining', in Hilson, G. (ed.) *The Socio-Economic Impacts of Artisanal and Small-Scale Mining in Developing Countries*. The Netherlands: Balkema, pp. 151–160.

Jønsson, J.B., Appel, P.W.U. and Chibunda, R.T. (2009). 'A matter of approach: the retort's potential to reduce mercury consumption within small-scale gold mining settlements in Tanzania', *Journal of Cleaner Production*, 17(1), pp. 77–86.

Jose, J. (2018) *"Gold Refining Industry in India"*. Bullion Bulletin. Available at: http://www.bullionbulletin.in/more_articles.aspx?pageid=DtGoldref111114 (Accessed: 10 February 2018)

JoyOnline (2018) *"Small-scale miners lose \$551m due to ban"*. 5th February. Available at: <https://www.myjoyonline.com/business/2018/february-5th/small-scale-miners-loose-551m-due-to-ban.php> (Accessed: 7 February 2018)

Kahn, R.L. and Cannel C.F. (1957) *The Dynamics of Interviewing: Theory, Technique, and Cases*. New York: Wile.

Kamlongera, P.J. (2011) 'Making the Poor 'Poorer' or Alleviating Poverty? Artisanal Mining Livelihoods in Rural Malawi', *Journal of International Development*, 23(8), pp. 1128–1139.

Kaplinsky, R. and Morris, M. (2002) *A Handbook for Value Chain Research*. Brighton: Institute for Development Studies.

Keita, S. (2001) *Study on Artisanal and Small-Scale Mining in Mali, Mining Minerals and Sustainable Development*, London: International Institute for Environment and Development.

Kelly, J. (2014) 'This mine has become our farmland: critical perspectives on the coevolution of artisanal mining and conflict in the Democratic Republic of the Congo', *Resources Policy*, 40, pp. 100–108.

Kelly, J., Greenberg, N., Sabet, D. and Fulp, J. (2014) *Assessment of Human Trafficking in Artisanal Mining Towns in Eastern Democratic Republic of the Congo*. Arlington: Social Impact Inc.

Kessler, J.J., Ndaluka, T.J., and Fisher, e., (2015) *External evaluation of Extending Fairtrade Gold to Africa project*. Aidenvironment and The Fairtrade Foundation.

Kenya, The Mining Bill, 2014

Kenya, Mining Act, 2012 (Chapter 306)

Kidido, J.K., Ayitey, J.Z., Kuusaana E.D. and Gavu, E.K. (2015) 'Who is the rightful recipient of mining compensation for land use deprivation in Ghana?', *Resources Policy*, 43(C), pp. 19–47.

KPCS (Kimberley Process Certification Scheme) (2015) Ghana. Available at: <https://www.kimberleyprocess.com/en/ghana#2015> (Accessed: 10 June 2016).

KPC (2016) 'Kimberley Process Rough Diamonds Statistics, Public Statistics Area, Annual Summary Tables, 2009 to 2014'. Washington DC: Kimberley Process Certification. Available at: https://kimberleyprocessstatistics.org/public_statistics (Accessed: 20 June 2016).

KPCS (Kimberley Process Certification Scheme) (2017) *What is the Kimberley Process?* Available at: <https://www.kimberleyprocess.com/en/what-kp> (Accessed: 8 February 2018)

KPMG (2014) *Ghana: Country mining guide*. KPMG Global Mining Institute, KPMG International.

Kvale, S. (2007) *The Sage Qualitative Research Kit, Doing Interviews*, Thousand Oaks, CA: Sage Publications

Labonne, B. and Gilman, J. (1999) "Towards building sustainable livelihoods in the artisanal mining communities". Paper presented at the Tripartite Meeting on Social and Labour Issues in Small-scale Mines, International Labour Organization. Geneva, pp. 17–21.

Laderchi, C.R., Saith, R. and Stewart, F. (2003) 'Does it Matter that we do not Agree on the Definition of Poverty? A Comparison of Four Approaches', *Oxford Development Studies*, 31(3), pp. 243–274.

Lahiri-Dutt, K. (2013) *Gendering the field: Towards sustainable livelihoods for mining in mining communities*. Canberra: ANU Press REVISIT

Lane, C. and Bachmann, R. (2001). *Trust Within and Between Organisations: Conceptual Issues and Empirical Applications*. Oxford: Oxford University Press.

LAP2 (Land Administration Project 2) (2018) *Mandate to Collect Stool Land Revenue*. Ministry of Lands and Natural Resources. Available at: <https://www.ghanalap.gov.gh/index.php/fees> (Accessed: 19 March 2018)

Larsen, M.N., Yankson, P. and Fold, N. (2009) 'Does Foreign Direct Investment (FDI) Create Linkages in Mining? The Case of Gold Mining in Ghana', in: Sumner, A., Sanchez-Ancochea, D., Rugraff, E. (eds.).

Transnational Corporations and Development Policy: Critical Perspectives. London: Palgrave Macmillan, pp. 247–273.

LBMA (The London Bullion Market Association) (2015) *The Good Delivery Rules for Gold and Silver Bars: Specifications for Good Delivery Bars and Application Procedures for Listing*. London: The London Bullion Market Association.

LBMA (The London Bullion Market Association), (2018). *Refiners Search*. Available at: <http://www.lbma.org.uk/refiners-gold-current> (Accessed: 18 March 2018)

Leiva, G.M.A. and Morales, S. (2013) 'Environmental assessment of mercury pollution in urban tailings from gold mining', *Ecotoxicology and Environmental Safety*, 90.

Levers, M.D., (2013) 'Philosophical Paradigms, Grounded Theory, and Perspectives on Emergence', *SAGE Open*, 1-6.

Levi, A. and Linton, A. (2003) 'Fair Trade: a cup at a time?', *Politics and Society*, 31(3), pp. 407–432.

Levin, E. (2010) "Mineral Certification Schemes in the African Great Lakes Region, A Comparative Analysis", *GTZ and International Conference on the Great Lakes Region*, Bujumbura, Burundi, August 2010. Available at: <http://www.levinources.com/assets/pages/report-giz-icglr-mineral-certification-schemes-great-lakes-region-glrl.pdf> (Accessed: 16 June 2016)

Lewis, J.D., and Weigert, A., (1985) 'Trust as a Social Reality', *Social Forces*, 63(4), pp. 967–985.

Li, P., Feng, X., Oiu, G., Shang, L. and Wang, S. (2012) 'Mercury pollution in Wuchan mercury mining area, Guizhou, Southwestern China: The impacts from large scale and artisanal mercury mining', *Environment International*, 42, pp. 59–66.

Lincoln, Y., and Guba, E. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage.

Lincoln, T., and Guba, E. (2016) *The Constructivist Credo*. UK: Routledge, Taylor and Francis Group.

Lomnitz, L.A. (1988) 'Informal Exchange Networks in Formal Systems: A Theoretical Model', *American Anthropologist*, 90(1), pp. 42–55.

Lynas, D., Goater, S., Griffin, M., Moore, A., Logrosa, G., Kamanga, E. and Pearce, M. (2014) *Water-Related Safety, Health and Sanitation of Artisanal and Small-Scale Miners and the Affected Communities*. Perth, WA: International Mining for Development Centre.

Lyon, F., (2005) 'Managing co-operation: Trust and power in Ghanaian associations', *Organization Studies*, 27(1), pp. 31–52.

Machado, N.M.C., (2011) 'Karl Polanyi and the New Economic Sociology: Notes on the Concept of (Dis)embeddedness' *RCCS Annual Review*, 3, pp. 119–140.

Maclin, B.J., Kelly, J.T.D., Perks, R., Vinck, P. and Phuong, P. (2017) 'Moving to the mines: Motivations of men and women for migration to artisanal and small-scale mining sites in Eastern Democratic Republic of the Congo', *Resources Policy*, 51, pp. 115–122.

Maconachie, R. (2009) 'Diamonds, governance and 'local' development in post-conflict Sierra Leone: lessons for artisanal and small-scale mining in sub-Saharan Africa?', *Resources Policy*, 34(1–2), pp. 71–79.

Maconachie, R. (2011) 'Re-agrarianizing livelihoods in post-conflict Sierra Leone? Mineral wealth and rural change in artisanal and small-scale mining communities', *Journal of International Development*, 23(8), pp. 1054–1067.

Maconachie, R. and Binns, T. (2007) 'Beyond the resource curse? Diamond mining, development and post-conflict reconstruction in Sierra Leone', *Resources Policy*, 32(3), pp. 104–115.

- Maconachie, R. and Hilson, G. (2011) 'Safeguarding livelihoods or exacerbating poverty? Artisanal mining and formalization in West Africa', *National Resources Forum*, 35(4), pp. 293–303.
- Maconachie, R. and Hilson, G. (2016) 'Re-thinking the child labor "problem" in rural sub-Saharan Africa: the case of Sierra Leone's "half shovels"', *World Development*, 78, pp. 136–147.
- Mahama, C.A. and Baffour, O.A. (2009) 'Management of Stool Land Revenue in Ghana: A study of the Nkawie and Toase Stools of the Atwima Nwabiagya District of the Ashanti Region', *Journal of Science and Technology*, 29(1), pp. 28–38.
- Maldar, S. (2011) *Fairtrade and Fairmined Gold, Empowering responsible artisanal and small-scale miners*. A Fairtrade Foundation and Alliance for Responsible Mining Report, London.
- Maponga, O. and Meck, M. (2003) 'Illegal artisanal gold panning in Zimbabwe: A study of challenges to sustainability along Mazowe River.', in Hilson, G. M. (ed.) *The socio-economic impact of small scale mining in developing countries*. The Netherlands: A.A. Balkema.
- Maponga, O. and Ngorima, C.F. (2003) 'Overcoming environmental problems in the gold panning sector through legislation and education: the Zimbabwean experience', *Journal of Cleaner Production*, 11(2), pp. 147–157.
- Marková, I., Lindell, P. and Gillespie, A. (2008) 'Trust and Distrust in Society', in Markova, I. and Gillespie, A. (eds.) (2008) *Trust and Distrust: Sociocultural Perspectives*. Charlotte, NC: Information Age Publishing Inc., pp. 3–27.
- Marshall, C., (2006). *Designing Qualitative Research: Data Collection Methods*. 4th edn., California: SAGE Publications, pp. 97–150.
- Marshall, C. and Rossman, G.B. (2006) *Designing Qualitative Research*. 4th edn., Thousand Oaks, CA: SAGE Publications.
- Marston, A. (2013) 'Justice for all? Material and semiotic impacts of Fair Trade craft certification', *Geoforum*, 44, pp. 162–169.
- Masuku, M.B., and Kirsten, J.F., (2010) 'The role of trust in the performance of supply chains: A dyad analysis of smallholder farmers and processing firms in the sugar industry in Swaziland', *Agricultural Economics Research, Policy and Practice in Southern Africa*, 43(2), pp. 147–161.
- Maxwell, J.A. (2012) *A Realist Approach for Qualitative Research*. Thousand Oaks, CA: SAGE Publications.
- Maylor, H. (2010) *Project Management*. 4th edn., London: Financial Times/Prentice Hall
- Maynard, T., Gilson, L. and Mathieu, J. (2012) 'Empowerment – Fad or Fab? A multilevel review of the past two decades of research', *Journal of Management*, 38, pp. 1231–1281.
- McGrath, S. (2013) 'Fuelling global production networks with slave labour?: migrant sugar cane workers in the Brazilian ethanol GPN', *Geoforum*, 44, pp. 32–43.
- McMahon, G. (2010) *The World Bank's Evolutionary Approach to Mining Sector Reform*. Washington DC: The World Bank.
- McMahon, G., and Moreira, S., (2014) *The Contribution of the Mining Sector to Socioeconomic and Human Development*, Extractive industries for Development Series, Washington DC: The World Bank
- McQuilken, J. (2016) 'Ethical gold' in sub-Saharan Africa: A viable empowerment strategy?', *International Development Planning Review*, 38(2), pp. 179–199. doi: 10.3828/idpr.2016.9

McQuilken, J. and Hilson, G. (2016) *Towards Inclusive Formalisation of ASM in Ghana: Background Research for an Action Dialogue*. London: International Institute of Environment and Development.

McQuilken, J. and Hilson, G. (2018) "Mapping' Small-Scale Mineral Production Networks: The Case of Alluvial Diamonds in Ghana.' *Development and Change*. Forthcoming. doi: <https://doi.org/10.1111/dech.12403>

Meagher, K. (2005) 'Social capital or analytical liability? Social networks and African informal economies', *Global Networks*, 5(3), pp. 217–238.

Meemken, E-M., Veettil, P.C. and Qaim, M. (2017) 'Toward Improving the Design of Sustainability Standards – A Gendered Analysis of Farmers' Preferences', *World Development*, 99, pp. 285–298.

Mensah, A.K., Mahiri, I.O., Owuse, O., Mireku, O.D., Wireko, I. and Kissi, E.A. (2015) 'Environmental Impacts of Mining: A Study of Mining Communities in Ghana', *Applied Ecology and Environmental Sciences*, 3(3), pp. 81–94.

MESTI (Ministry of Environment, Science, Technology and Innovation) (2018). Available at: <http://mesti.gov.gh/> (Accessed: 20 March 2018)

Metals Focus (2018). Available at: <https://www.metalsfocus.com> (Accessed: 10 January 2018)

Microlinks (2017) *Horizontal Linkages – Overview*. Available at: <https://www.microlinks.org/good-practice-center/value-chain-wiki/horizontal-linkages-overview> (Accessed: 4 September 2017)

Miles, M.B., and Huberman, A.M., (1994) *Qualitative Data Analysis, An Expanded Sourcebook*. London: SAGE.

MinCom (Minerals Commission) (2010) *Minerals Concession Map*. Available at: http://www.abcg.org/document_details?document_id=742 (Accessed: 11 March 2018)

MinCom (Minerals Commission) (2015). *District Data of Small-Scale Mines and Concessions*, Tarkwa Ghana: Minerals Commission Distract Office. *Private record*.

MinCom (Minerals Commission) (2015b). Available at: <http://www.eservices.gov.gh/MINCOM/SitePages/MINCOM-Home.aspx> (Accessed: 4 April 2015)

MinCom (2018a) *Ghana Online Repository, Mineral Commission Ghana and Revenue Development Foundation*. Available at: <https://ghana.revenuedev.org/map> (Accessed: 9 January 2018)

MinCom (Minerals Commission) (2018b) Application for Small Scale Mining Licence. Available at: <http://www.eservices.gov.gh/MINCOM/SitePages/Guidelines-MiningLicence.aspx> (Accessed: 21 March 2018)

Mining Indaba (2018) *Agenda 2018*. 5–8 February. Cape Town. Available at: <https://www.miningindaba.com/ehome/283869/agenda/> (Accessed: 14 March 2018)

Mitchell, J., Keane, J., and Coles, C., (2009) *Trading up: How a Value Chain Approach Can Benefit the Rural Poor*. London: Comercio y Pobreza en Latinoamérica (COPLA) and the Overseas Development Institute.

MLNR (Ministry of Lands and Natural Resources) (2016) "*Hon. Osah Mills launches the Minerals and Mining Policy of Ghana*". Available at: <http://mlnr.gov.gh/index.php/article-categories/128-minerals-and-mining-policy> (Accessed: 18 June 2017)

MLNR (Ministry of Lands and Natural Resources) (2018) *Organizational Structure for the Ministry of Lands and Natural Resources*. Available at: <http://www.mlnr.gov.gh/index.php/about-us/structure> (Accessed: 20 March 2018)

Moberg, M. and Lyon, S. (2010) 'What's Fair? The Paradox on Seeking Justice through Markets', in Lyon, S. and Moberg, M. (eds.) *Fair Trade and Social Justice: Global Ethnographies*. New York: New York University Press, pp. 1–32

Mohan, S. (2010) *Fair Trade Without the Froth, A Dispassionate Economic Analysis of "Fair Trade"*. London: Institute of Economic Affairs.

Mondlane, S. and Shoko, D.S.M. (2003) 'The Socio- Economic and Environmental Impacts of Artisanal and Small-Scale Mining in Mozambique', in Hilson, G.M. (ed.) *The Socio-Economic Impacts of Artisanal and Small-Scale Mining in Developing Countries*. The Netherlands: A.A. Balkema, pp. 265–280

Moore Stephens (2018) EEITI (Ethiopian Extractive Industries Transparency Initiative) *EEITI report for the year ended 7 July 2015*. London: Moore Stephens LLP

Moraes, C., Carrigan, M., Bosangit, C., Ferreira, C. and McGrath, M. (2015) 'Understanding Ethical Luxury Consumption Through Practice Theories: A Study of Fine Jewellery Purchases', *Journal of Business Ethics (Online)*. Available at: <https://link.springer.com/article/10.1007/s10551-015-2893-9> (Accessed: 4 September 2015)

Moran, D., McBain, D., Kanemoto, K., Lenzen, M., and Geschke, A., (2014) 'Global Supply Chains of Coltan', *Journal of Industrial Ecology*, 19(3), pp. 357–365.

Morbiwala, Z. (2015) "*The Melee Market*", Rapaport Magazine. Available at: www.diamonds.net/Magazine/Article.aspx?ArticleID=53033&RDRIssueID=139 (Accessed: 15 June 2016).

Morgan, D.L. (2007) 'Paradigms Lost and Pragmatism Regained: Methodological Implications of Combining Qualitative and Quantitative Methods', *Journal of Mixed Methods Research*, 1(1), pp. 48–76.

Mugova, A. (2001) "The Shamva Mining Centre Project" Mining, Minerals and Sustainable Development (MMSD) Workshop, 19–20 November, London: International Institute for Environment and Development.

Muradian, R., Verschoor, G., Bolivar, E. and Ochoa, G. (2011) 'Building Inclusive Value Chains in Biotrade: A Comparison of Two Cases from South America', in Helmsing, B. and Vallema, S. (eds.) *Value Chains, Inclusion and Endogenous Development: Contrasting Theories and Realities*. London: Routledge, pp. 266–285.

Murphy, J.T. (2012) 'Global Production Networks, Relational Proximity, and the Socio-spatial Dynamics of Market Internationalization in Bolivia's Wood Products Sector', *Annals of the Association of American Geographers*, 102(1), pp. 208–233.

Mustapha, S. (2014) "*Redundant Mine Workers Hit Windfall*" Available at: <http://graphic.com.gh/business/business-news/16961-redundant-mine-workers-hit-windfall.html> (Accessed: 4 February 2014)

Mutemer, N., and Samba, M. (2010) *Gender and ASM: Mozambique Baseline Study of an ASM Community in Manica*. Mozambique draft pilot study report. Washington DC: The World Bank.

Mutemer, N., Walker, J.Z., Coulson, N. and Watson, I. (2016) 'Capacity building for self-regulation of the Artisanal and Small-Scale Mining (ASM) sector: A policy paradigm shift aligned with development outcomes and a pro-poor approach', *The Extractive Industries and Society*, 3, pp. 653–658.

Mutemer, N. and Petersen, F. (2002) 'Small-scale mining in South Africa: Past, present and future', *Natural Resources Forum*, 26, pp. 286–292.

Mwakumanya, M.A., Mwikamba, M. and Juma, H. (2016) 'Socio-economic and environmental impact of mining on women in Kasigau mining zone in Taita Taveta County', *Journal of Sustainable Mining*, 15(4), pp. 197–204.

- Myers, R. (1991) *Ghana*. World Bibliographical Series 124. Oxford: Clio Press Ltd.
- Narayan, D. (2002) *Empowerment and Poverty Reduction: A Sourcebook*. Washington DC: World Bank.
- NaTHNaC (National Travel Health Network and Centre) (2014). Available at: <https://nathnac.net> (Accessed: 18 November 2014)
- NDPC, (National Development Planning Commission) (2005) *Growth and Poverty Reduction Strategy (GPRSII) 2006–2009*. Accra/Washington DC: Republic of Ghana/IMF Available: [http://siteresources.worldbank.org/INTPRS1/Resources/GhanaCostingofGPRS_2\(Nov-2005\).pdf](http://siteresources.worldbank.org/INTPRS1/Resources/GhanaCostingofGPRS_2(Nov-2005).pdf) (Accessed: 10 January 2018)
- NDPC (National Development Planning Commission), Government of Ghana (2010) *Medium-Term National Development Policy Framework: Ghana Shared Growth and Development Agenda 2010-2013. Volume I: Policy framework*. Government of Ghana.
- Nestlé (2015) "Nestlé becomes the first major confectionery company to source 100% certified sustainable cocoa in the UK and Ireland". 8th December. Available at: <https://www.nestle.co.uk/media/pressreleases/100pc-sustainable-cocoa> (Accessed: 14 March 2016)
- NHS (2014) *Ebola Messages*. Available at: <https://www.england.nhs.uk/category/ebola-messages/> (Accessed: 18 November 2014)
- Nöetstaller, R. (1994) 'Small-scale Mining: Practices, Policies and Perspectives'. in Ghose, A.K. (ed.) *Small-Scale Mining: A Global Overview*. Oxford and IBH Publishing Co. New Delhi.
- Nöetstaller, R. (1987) *Small-Scale Mining: A Review of the Issues*. Washington DC: The World Bank. World Bank Technical Paper No 75.
- NRGI (Natural Resource Governance Institute) (2015) 'The Resource Curse: The Political and Economic Challenges of Natural Resource Wealth'. *NRGI Reader*, March 2015. Available at: https://resourcegovernance.org/sites/default/files/nrgi_Resource-Curse.pdf (Accessed: 4 May 2015)
- NRGI (Natural Resource Governance Institute) (2017) *2017 Resource Governance Index*. Available at: <https://resourcegovernance.org/sites/default/files/documents/2017-resource-governance-index.pdf> (Accessed: 4 November 2017)
- Nurse, C.H. (2016) *AEITI (Afghanistan Extractive Industries Transparency Initiative) Inception Report and Fourth Reconciliation Report*. Thame: Hart Nurse Ltd
- Nyabor, J. (2018) "Small-scale miners warn against further extension of mining ban". 18 January. Available at: <http://citifmonline.com/2018/01/18/small-scale-miners-warn-against-further-extension-of-mining-ban/> (Accessed: 21 January 2018)
- Nyame, F.K. and Blocher, J. (2010) 'Influence of land tenure practices on artisanal mining activity in Ghana', *Resources Policy*, 35(1), pp. 47–53.
- Nyame, F and S. Danso (2006) 'Socioeconomic, Environmental and Policy Implications of Alluvial Diamond Mining in the Birim Diamondiferous Field, Eastern Ghana', in Hilson, G. (ed.) *Small-Scale Mining, Rural Subsistence and Poverty in West Africa*, pp. 219–26. Rugby: Practical Action Publishing
- Oakley, P. (2001) *Evaluating empowerment: Reviewing the Concept and Practice*. Oxford: INTRAC.
- Oakley, P. (2015) 'Introducing Fairtrade and Fairmined Gold: An attempt to reconfigure the social identity of a substance' in: Drazin, A., and Kuechler, S., (eds.) *The Social Life of Materials*. Bloomsbury.
- OANDA (2018). Available at: <https://www.oanda.com/currency/converter/> (Accessed: 14 February 2018)

Odera, L.C., (2013) 'The Role of Trust as an Informal Institution in the Informal Sector in Africa', *Africa Development*, 38(3-4), pp. 121-146.

Odour, S.K. (2013) "Task force on small-scale mining complete report". Daily Graphic Ghana. Available at: <https://www.graphic.com.gh/?view=article&id=21286:task-force-on-small-scale-mining-completes-report&catid=185> (Accessed: 4 March 2016)

OECD (The Observatory of Economic Complexity) (2017). *Ghana*. Available at: <https://atlas.media.mit.edu/en/profile/country/gha/> (Accessed: 4 October 2017)

OECD (The Observatory of Economic Complexity) (2018). *Ghana*, Visualisations. Available at: <https://atlas.media.mit.edu/en/profile/country/gha/> (Accessed: 2 January 2018)

OECD (Organisation for Economic Cooperation and Development) (2011) *OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas*. Paris: OECD Publishing.

OECD (Organisation for Economic Cooperation and Development) (2014) *African Economic Outlook 2014: Global Value Chains and Africa's Industrialisation*. Available at: https://www.oecd-ilibrary.org/development/african-economic-outlook-2014_aeo-2014-en (Accessed: 12 January 2017)

OECD (Organisation for Economic Cooperation and Development) (2016) *OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas*. 3rd edn. Available at: <http://www.oecd.org/corporate/mne/mining.htm> (Accessed: 12 January 2017)

O'Faircheallaigh, C. and Corbett, T. (2016) 'Understanding and improving policy and regulatory responses to artisanal and small scale mining', *The Extractive Industries and Society*, 3(4), pp. 961-971.

Office of the Administrator of Stool Lands (OASL) Act, (1994) (Act 481)

Okoh, G.A. (2013) 'Grievance and conflict in Ghana's gold mining industry: The case of Obuasi', *Futures* 62, pp. 51-57.

Onwuegbuzie, A.J. and Leech, N.L. (2007) 'Sampling Designs in Qualitative Research: Making the Sampling Process More Public', *The Qualitative Report*, 12(2), pp. 238-254. Available at: <http://nsuworks.nova.edu/tqr/vol12/iss2/7> (Accessed: 14 August 2017)

Oramah, I., Richards, J.P., Summers, R., Garvin, T., and McGee, T.K., (2015) 'Artisanal and small-scale mining in Nigeria: Experiences from Niger, Nasarawa and Plateau states. *The Extractive Industries and Society*, 2(4), pp. 694-703.

Otto, J.M. (1998) 'Global changes in mining laws, agreements and tax systems', *Resources Policy*, 24(2), pp. 79-86.

Oxford Business Group (2013). *The Report: Ghana 2013*. Oxford: Oxford Business Group.

PAC (Partnership Africa Canada) (2017) *Just Gold*. Available at: <http://www.pacweb.org/en/just-gold> (Accessed: 26 July 2017)

PanAfGeo (PanAfrican Geoscience) (2017) TRAINING in WP3: *Artisanal and Small-Scale Mining*. Available at: http://panafgeo.eurogeosurveys.org/?page_id=599 (Accessed: 18 September 2017)

Patel, K., Rogan, J., Cuba, N. and Bebbington, A. (2016) 'Evaluating conflict surrounding mineral extraction in Ghana: Assessing the spatial interactions of large and small-scale mining', *The Extractive Industries and Society*, 3(2), pp. 450-463.

Perks, R. (2011) "'Can I go?' Exiting the artisanal mining sector in the Democratic Republic of Congo', *Journal of International Development*, 23(8), pp. 1115-1127.

Peterson, N.A. and Zimmermann, M.A. (2004) 'Beyond the individual: toward a nomological network of organizational empowerment', *American Journal of Community Psychology*, 34(1–2), pp. 129–145.

Phillips, N., Bhaskaran, R., Nathan, D. and Upendranadh C. (2011) *Child labour in global production networks: poverty, vulnerability and 'adverse incorporation' in the Delhi garments sector*. CPRC (Chronic Poverty Research Centre), Manchester: CPRC, University of Manchester. Working Paper 177.

Phillips, N. (2011) 'Informality, Global Production Networks and the Dynamics of "Adverse Incorporation"', *Global Networks*, 11(3), pp. 380–397.

Phillips, D.P. (2014) 'Uneven and unequal people-centred development: the case of Fair Trade and Malawi sugar producers', *Agriculture and Human Values*, 31(4), pp. 563–576.

Plank, L., Staritz, C., and Lukas, K., (2009) *Labour Rights in Global Production Networks, An Analysis of the Apparel and Electronics Sector in Romania, Austria*: AK Wien.

PMMC (Precious Minerals Marketing Corporation) (no date) 'Gold Purchase and Export Procedures'. Leaflet. Diamond House Accra: Precious Minerals Marketing Company Limited.

PMMC (Precious Minerals Marketing Corporation) (2016) *Diamond Production and Marketing*. Accra: Precious Minerals Marketing Corporation. Available at: <http://pmmcghana.com/diamond-production-marketing/> (Accessed: 14 June 2016)

Podhorsky, A. (2015) 'A positive analysis of Fairtrade certification', *Journal of Development Economics*, 116, pp. 169–185.

Polyani, K (1944) *The great transformation: the political and economic origins of our time*. Boston, MA, Beacon Press.

Ponte, S. and Kawuma, F. (2003) *Coffee Certification in Uganda: Feasibility Study*. Report for DfID (Department for International Development) and the Uganda Coffee Development Authority. Kampala, Uganda.

Porter, M.E. (1985) *Competitive Advantage Creating and Sustaining Superior Performance*. New York: Free Press.

Prebisch, R. (1950) *The Economic Development of Latin America and its principal problems*. New York. United Nations.

Public Health England (2014) *Risk assessment of the Ebola outbreak in West Africa: UPDATED 20 October*. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/365128/PHE_Risk_Assessment_Update_3_201014.pdf (Accessed: 18 November 2014)

Purani, K. and Mehta, D. (2000) *A Research Report on Gujarat Model of Entrepreneurial Innovation: A Study of Surat Diamond Industry*. Brighton: SEAKE Centre, University of Brighton. Working Paper WP 120.

Putnam, R.D. (1995) 'Bowling Alone: America's Declining Social Capital', *Journal of Democracy*, January, pp. 65–78.

Quaedvlieg, J., García Roca, I.M. and Ros-Tonen, M.A.F. (2014) 'Is Amazon Nut Certification a Solution for Increased Smallholder Empowerment in Peruvian Amazonia?', *Journal of Rural Studies*, 33, pp. 41–55.

Qin, D. (2016) Positionality, in Wong, A., Wickramasinghe, M., Hoogland, R. and Naples, N.A. (eds.). *The Wiley Blackwell Encyclopaedia of Gender and Sexuality Studies*, 1. Wiley and Sons. doi: 10.1002/9781118663219.wbegs619

- Radaev, V., (2005) 'Establishing trust in a distrustful society: the case of Russian business'. In (ed.) Hans-Hermann H., and Welter, F., 'Trust and Entrepreneurship, A West-East Perspective'. UK: Edward Elgar, pp. 114
- Raddon, A. (2010) Early Stage Research Training: Epistemology & Ontology in Social Science Research. College of Social Science. Leicester: University of Leicester.
- Radhuber, I.S. (2015) *Extractive Processes, Global Production Networks and Inequalities*. Berlin: International Research Network on Interdependent Inequalities in Latin America. Working Paper No. 89
- Rahnema, M. (1992) 'Poverty', in W. Sachs (ed.) (2010) *The Development Dictionary*. London: Zed Books, pp. 158–176.
- Raikes, P., Friis Jensen, M. and Ponte, S. (2000) 'Global commodity chain analysis and the French filière approach: comparison and critique', *Economy and Society*, 29(3), pp. 390–417.
- Raj-Reichert, G. (2013) 'Safeguarding Labour in Distant Factories: Health and Safety Governance in an Electronics Global Production Network', *Geoforum*, 44, pp. 23–31.
- Ramdoo, I. (2013) *Fixing Broken Links: Linking extractive sectors to productive value chains*. European Centre for Development Policy Management (ECDPM). Maastricht: ECPDM. Discussion Paper 143.
- Ranjan, S. (2006) 'Occupational diversification and access to rural employment: revisiting the non-farm employment debate' *Labour and Development*, 11–12, pp. 102–131.
- Raynolds, L.T., (2007) 'Mainstreaming Fair Trade Coffee: From Partnership to Traceability' *World Development*, 37(6), pp. 1083–1093.
- RCS Global (2016) *State Gold-Buying Programmes, Effective instruments to reform the artisanal and small-scale gold mining sector?* London: International Institute for Environment and Development (UK).
- Reardon, T. & Farina, E. (2001). The rise of private food quality and safety standards: illustrations from Brazil. *International Food and Agribusiness Management Review* (4), 413–421.
- Reno, W. (1997) 'African weak states and commercial alliances', *African Affairs*, 96(383), pp. 165–185.
- Renard, M.C. (2005). 'Quality certification, regulation and power in fair trade', *Journal of Rural Studies*, 21, pp. 419–431.
- Retail Week (2016) *Data: The top 50 retailers by sales during the 2014/1015 financial year*. Retail Week.
- Ribot, J.C., and Pelus, N.L. (2003) 'A Theory of Access' *Rural Sociology*, 68(2), pp. 153–181.
- Richard, M., Moher, P. and Telmer, K. (2014) *Health Issues in Artisanal and Small-Scale Gold Mining: Training for health professionals*. Version 1.0. Victoria BC: Artisanal Gold Council.
- Rickard, S., Treasure, W., McQuilken, J., Mihaylova, A., Baxter, J., (2017). Can a mining law unlock the potential of women? London: Adam Smith International and International Women in Mining, pp. 1–54.
- Riddell, B. (1997) 'Structural Adjustment Programmes and the City in Tropical Africa', *Urban Studies*, 34, (8).
- Robertson, A.F. (1982) 'Abusa: The structural history of an economic contract', *The Journal of Development Studies*, 18(4), pp. 447–478.
- Rogers, E. (1962) *Diffusion of Innovations*. New York: Free Press.
- Ronchi, L. (2006) *"Fairtrade" and Market Failures in Agricultural Commodity Markets*. Policy Research Working Paper; No. 4011. Washington DC: World Bank.

- Rorty, R. (1980) *Philosophy and the mirror of nature*. Princeton, NJ: Princeton University Press.
- Rousseau, D.M., Sitkin, S., Burt, R. and Camerer, C. (1998) 'Not So Different After All: A Cross-discipline View of Trust', *Academy of Management Review*, 23(3), pp. 393–404.
- Rowlands, J. (1995) 'Empowerment examined', *Development in Practice*, 5(2), pp. 101–107. doi: 10.1080/0961452951000157074
- Rowlands, J. (1997) *Questioning Empowerment: Working with Women in Honduras*. Oxford: Oxfam.
- Ruben, R., and Fort, R. (2012) The Impact of Fair Trade Certification for Coffee Farmers in Peru, *World Development*, 40,(3), pp. 570–582.
- Rudestam, K.E. and Newton, R.R. (2007) *Surviving Your Dissertation: A Comprehensive Guide to Content and Process*. 3rd edn., Thousand Oaks CA: SAGE Publications, pp. 87–116.
- Rwanda, Ministerial Order N°002/MINIRENA/2015 on Criteria Used in Categorisation of Mines and Determining Types of Mines.
- Sagaon-Teyssier, L., Balique, H., Diallo, F., Kalampalikis, N., Mora, M., Bourrelly, M., Suzan-Monti., Spire, B. and Keita, B.D. (2017) 'Prevalence of HIV at the Kokoyo informal gold mining site: What lies behind the glitter of gold with regard to HIV epidemics in Mali? A community-based approach' (The ANRS-12339 Sanu Gundo cross-sectional survey), *BMJ Open*, 7(8).
- Sahara Gold Refinery, (2018) *Home* Available at: <http://euroget-group.com/subsidiaries/euroget-gold-refinery-ltd/> (Accessed: 29 March 2018)
- Saldaña, J. (2009) *The Coding Manual for Qualitative Researchers*. London: SAGE Publications.
- Saldarriaga-Isaza, A., Villegas-Palacio. C. and Arango, S. (2013) 'The public good dilemma of a non-renewable common resource: A look at the facts of artisanal gold mining', *Resources Policy* 38(2), pp. 224–232. doi: 10.1016/j.resourpol.2013.02.001
- Samman, F. and Santos, M.E. (2009) *Agency and Empowerment: A review of concepts, indicators, and empirical evidence*. Oxford: Oxford Poverty and Human Development Initiative, The University of Oxford.
- Sangnier, M., and Zylberberg, Y., (2017). 'Protests and trust in the state: Evidence from African countries', *Journal of Public Economics*, 152, pp. 55–67.
- Saunders, M., Lewis, P. and Thornhill, A. (2012) *Research Methods for Business Students*. 6th edn., Harlow: Pearson.
- SBGA (Swiss Better Gold Association) (2017) *About*. Available at: <http://www.swissbettergold.ch/en/about> (Accessed: 4 November 2017)
- Schein, P. (2014). 'ASM Gold as a Development Tool: The Fairmined Standard'. Presentation, Alliance for Responsible Mining. Available at: <http://igfmining.org/wp-content/uploads/2014/11/4.-P-Schein-ASM-gold-as-a-tool-for-development.pdf> (Accessed: 10 January 2018).
- Scoones, I. (1998) Sustainable rural livelihoods: a framework for analysis. IDS working paper 72. Brighton: IDS.
- SEC (Securities and Exchange Commission) (2012) *Conflict Minerals – Final Ruling*. SEC 17 CFR PARTS 240 and 249b. (Release No. 34-67716; File No. S7-40-10). Available at: <http://www.sec.gov/rules/final/2012/34-67716pf> (Accessed: 25 September 2014)

Seeling, A. (2003) 'Report on Field Research into the Socio-Economic and Social Impact of Artisanal and Small-Scale Mining in Peru' in Hilson, G. (ed.) *The Socio-Economic Impacts of Artisanal and Small-Scale Mining in Developing Countries*. The Netherlands: A.A. Balkema, Swets Publishers, pp. 625–660.

Siegel, S., and Veiga, M.M., (2009). 'Artisanal and small-scale mining as an extralegal economy: De Soto and the redefinition of formalization', *Resources Policy* 34, pp. 51–56.

Sigam, C., and Garcia, L., (2012). *Extractive Industries: Optimizing value retention in host countries*. New York and Geneva: UNCTAD (United Nations conference on Trade and Development). Available at: http://unctad.org/en/PublicationsLibrary/suc2012d1_en.pdf (Accessed: 9 November 2017).

Seligman, A.B. (1997) *The Problem of Trust*. Princeton, NJ: Princeton University Press.

Selwyn, B. (2013) 'Social Upgrading and Labour in Global Production Networks: A Critique and an Alternative Conception', *Competition and Change*, 17(1), pp. 75–90.

Sen, A. (1989) 'Development as Capability Expansion', *Journal of Development Planning*, 19, pp. 41–58.

Sen, A. (1999) *Development as Freedom*. Oxford: Oxford University Press.

Siegel, S. and Veiga, M. (2009) 'Artisanal and small-scale mining as an extra-legal economy. De Soto and the redefinition of "formalization"', *Resources Policy*, 34(1–2), pp. 51–56.

Silver, J. (1981) 'The failure of European mining companies in the nineteenth-century gold coast', *Journal of African History*, 22, pp. 511–529.

Silverman, D. (2011) *Interpreting qualitative data: A guide to principles of qualitative research*. London: SAGE.

Simpson, J.A. (2007) 'Psychological foundations of trust', *Current Directions in Psychological Science*, 16(5), pp. 264–268

Small-Scale Gold Mining Law, 1989 (Ghana)

Smith, A.M. (2013) 'Fair trade governance and diversification: The experience of the National Smallholder Farmers' Association of Malawi', *Geoforum*, 48, pp. 114–125.

Solidaridad (2015) *Gold*. Available at: <https://www.solidaridadnetwork.org/supply-chains/gold> (Accessed: 4 June 2016)

Solidaridad (2016) *Solidaridad Network 2016 Annual Report, Gold*. Available at: <http://annualreport.solidaridadnetwork.org/2016/en/gold> (Accessed: 3 January 2018)

Solidaridad (2018) *On the road to good gold*. Available at: <https://www.solidaridadnetwork.org/supply-chains/gold> (Accessed: 3 January 2018)

Soparnot, R. (2011) 'The concept of organizational change capacity', *Journal of Organizational Change*, 5, pp. 640–661.

Spiegel, S.J. and Veiga, M. (2010) 'International guidelines on mercury management in small-scale gold mining', *Journal of Cleaner Production*, 18(4), pp. 375–385.

Spiegel, S.J. (2009) 'Socioeconomic dimensions of mercury pollution abatement: Engaging artisanal mining communities in Sub-Saharan Africa', *Ecological Economics*, 68 (12).

Spiegel, S.J. (2012) 'Microfinance services, poverty and artisanal mineworkers in Africa: In search of measures for empowering vulnerable groups', *Journal of International Development*, 24, pp. 485–517.

Spooner, N.J., and Smith, L.D., (1991) *Structural Adjustment and policy sequencing in sub-Saharan Africa*. Food and Agriculture Organization of the United Nations (FAO) Economic and Social Development Paper, Rome: FAO.

Standing, A. and G. Hilson. (2013) "Distributing Mining Wealth to Communities in Ghana: Addressing Problems of Elite Capture and Political Corruption." U4 Issue No. 5, Anti-Corruption Resource Centre, Bergen, Norway.

Statista (2017) *Number of smartphones sold to end users since 2007*. Available at: <https://www.statista.com/statistics/263437/global-smartphone-sales-to-end-users-since-2007/> (Accessed: 29 November 2017)

Steinmüller, K. (2017) *Concepts and Strategies for the Designation and Management of ASM Zones. A Contribution to the Formalization of the ASM Sector*. Hanover: Bundesanstalt für Geowissenschaften und Rohstoffe (Federal Institute for Geosciences and Natural Resources).

Strauss, A. and Corbin, J.M. (1998) *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*. 2nd edn., California: SAGE Publications.

Sultana, F. (2007) 'Reflexivity, Positionality and Participatory Ethics: Negotiating Fieldwork Dilemmas in International Research', *ACME, An International Journal for Critical Geographies*, 6(3), pp. 386–394.

Taylor, H., Appleton, J.D., Lister, R., Smith, B., Chitamwebwa, D., Mkumbo, O., Machiwa, J.F., Tesha, A.L. and Beinhoff, C. (2005) 'Environmental assessment of mercury contamination from the Rwamagasa artisanal and gold mining centre, Geita District, Tanzania', *Science of the Total Environment*, 343(1–3), pp. 111–133.

Taylor, A.A. (2006). *An Economic History of the Ashanti Goldfields Corporation, 1895–2004: Land, Labour, Capital and Enterprise*. PhD Thesis, London School of Economics and Political Science: University of London.

Teschner, B. (2013) 'How you start matters: A comparison of Gold Fields' Tarkwa and Damang Mines and their divergent relationships with local small-scale miners in Ghana', *Resources Policy*, 38(3), pp. 332–340.

Teschner, B. (2014) "'Orpillage pays for everything": How artisanal mining supported rural institutions following Mali's coup d'état', *Futures*, 62(A), pp. 140–150.

Tetteh, S. (2012) *"Diamond Cutting & Polishing Centre Inaugurated"* 29 February. Available at: <https://www.newsghana.com.gh/diamond-cutting-polishing-centre-inaugurated/>

The Foreign Exchange Act, 2006 (Act 723)

The Jewellery Editor (2011) *"Oscars 2011: a look at who wore what jewels last year"*. 4 March. Available at: <http://www.thejewelleryeditor.com/jewellery/article/oscars-2011-a-jewellery-revolution/> (Accessed: 11 May 2016)

The Jewellery Editor (2014a) *"Chopard creates first ever Palme d'Or award in Fairmined gold for the Cannes Film Festival 2014"*. 14 May. Available at: <http://www.thejewelleryeditor.com/jewellery/article/first-glimpse-of-chopard-palme-dor-in-fairmined-gold/> (Accessed: 11 May 2016)

The Jewellery Editor (2014b) *"Cate Blanchett rises to the Green Carpet Challenge by choosing Chopard jewels for the Golden Globes"*. 13 January. Available at: <http://www.thejewelleryeditor.com/jewellery/article/cate-blanchett-rises-to-the-green-carpet-challenge-by-choosing-chopard-jewels-for-the-golden-globes/> (Accessed: 11 May 2016)

The Real Asset Co. (2013) *"Where are the world's largest gold refineries?"* 20 May. Available at: <http://therealasset.co.uk/gold-refinery-list/> (Accessed: 29 November 2017)

The Small-Scale Gold Mining Law, 1989

Tripp, A.M. (1997). *Changing The Rules: The Politics of Liberalization and the Urban Informal Economy in Tanzania*. Los Angeles: University of California Press.

Tschakert, P. (2009) 'Recognizing and nurturing artisanal mining as a viable livelihood', *Resources Policy*, 34(1–2), pp. 24–31.

Tschakert, P. and Singha, K. (2007) 'Contaminated identities: mercury and marginalization in Ghana's artisanal mining sector', *Geoforum*, 38(6), pp. 1304–1321.

Uganda, The Mineral Policy of Uganda, 2000

Uganda, Mining Act of Uganda, 2003

UK Foreign Office (2014) *Foreign Travel Advice – Ghana*. Available at: <https://www.gov.uk/foreign-travel-advice/ghana> (Accessed: 18 November 2014)

UMAT (University of Mines and Technology) (2016a) *Minerals Commission of Ghana Commissions UMaT to undertake training of DMOs, DMCS, EPA Officers, and members of GNASSM on Effective Management of Small-scale Mining activities in Ghana*. Available at: <https://www.umat.edu.gh/media-press/happenings/news-events/464-minerals-commission-of-ghana-commissions-umat-to-undertake-training-of-dmos,-dmcs,-epa-officers,-and-members-of-gnassm-on-effective-management-of-small-scale-mining-activities-in-ghana.html> (Accessed: 22 June 2017)

UMAT (University of Mines and Technology) (2016b) *The Australian High Commission in Ghana Supports UMaT with AUD\$60,000 to train Small Scale Miners in Ghana*. Available at: https://umat.edu.gh/about_umat/2013-11-21-13-24-45/finance-office/87-about-us/442-the-australian-high-commission-in-ghana-supports-umat-with-aud-60,000-to-train-small-scale-miners-in-ghana.html (Accessed: 22 June 2017)

UN (United Nations) (1996) 'Recent developments in small-scale mining: a report of the secretary-general of the United Nations', *Natural Resources Forum*, 20(3), pp. 215–225.

UN (United Nations) (1972) *Small-Scale Mining in Developing Countries*. New York: United Nations.

UN (United Nations) (2014) A Guide to Traceability: A Practical Approach to Advance Sustainability in Global Supply Chains. Available at: https://www.bsr.org/reports/BSR_UNGC_Guide_to_Traceability.pdf (Accessed: 18 November 2014)

UNDP (United Nations Development Programme) (2016). *Human Development Report 2016*. [Table 1]. Human Development Index and its components. Available at: <http://hdr.undp.org/en/composite/HDI> (Accessed: 15 August 2016)

UNECA and UDESA (United Nations Economic Commission for Africa) and (United Nations Department for Economic and Social Affairs) (2002) Seminar on Artisanal & Small-Scale Mining in Africa: "Identifying Best Practices & Building the Sustainable Livelihoods of Communities". Available at: http://www.artisanalmining.org/Repository/01/The_CASM_Files/CASM_Meetings_National/2002_Cameroon_Yaounde/Yaounde_Recommendations.pdf (Accessed: 23 March 2017)

UNECA (United Nations Economic Commission for Africa) (2011) *Minerals and Africa's Development: The International Study Group Report on Africa's Mineral Regimes*. Addis Ababa, Ethiopia: United Nations Economic Commission for Africa and African Union.

UNEP (United Nations Environment Programme) (2012) Analysis of Formalization Approaches in the Artisanal and Small-Scale Gold Mining Sector Based on Experiences in Ecuador, Mongolia, Peru, Tanzania and Uganda. Geneva: United Nations Environment Programme, Division of Technology, Industry and Economics (DTIE), Chemical Branch.

- UNEP (United Nations Environment Programme) (2013) *Minamata Convention on Mercury, Text and Annexes*. United Nations. Available at: <http://www.mercuryconvention.org/Portals/11/documents/Booklets/COP1%20version/Minamata-Convention-booklet-eng-full.pdf> (Accessed: 20 January 2017).
- UNEP (United Nations Environment Programme) (2015) Developing a National Action Plan to Reduce, and Where Feasible, Eliminate Mercury Use in Artisanal and Small Scale Gold Mining (Working Draft). Available at: https://wedocs.unep.org/bitstream/handle/20.500.11822/11371/National_Action_Plan_draft_guidance_v12.pdf?sequence=1&isAllowed=y (Accessed: 24 January 2016)
- University of Surrey (2014) Safety When Travelling Abroad & in the UK. Guidance for Staff and Generic Risk Assessment for Travel Abroad. Available at: http://portal.surrey.ac.uk/pls/portal/docs/PAGE/HSD/A_TO_Z_TOPICS/R_TO_Z_TOPICS/TRAVEL/TRAVEL%20GUIDANCE%20APRIL%202014.PDF (Accessed: 18 November 2014)
- Valerio, G. (2013) *Making Trouble: Fighting for Fair Trade Jewellery*. Oxford: Lion Hudson.
- Valters, C. (2015) *Theories of Change: Time for a radical approach to learning in development*. London: Overseas Development Institute.
- Van Bockstael, S. (2014) 'The persistence of informality: Perspectives on the future of artisanal mining in Liberia', *Futures*, 62, pp. 10–20.
- Van Oss, H.G. (1994) *The Mineral Industry of Ghana*. Reston, VA: U.S. Geological Survey.
- Van Straaten, P. (2000) 'Mercury contamination associated with small-scale gold mining in Tanzania and Zimbabwe', *The Science of the Total Environment*, 259, pp. 105–113.
- Veiga, M.M. (2004) *Equipment Specification for Demonstration Units in Zimbabwe*. UNIDO Global Mercury Project. Vienna: United Nations Industrial Development Organization.
- Verbrugge, B., Besmanos, B. and Buxton, A. (2014) *Artisanal and small-scale mining: protecting those 'doing the dirty work'*. London: International Institute for Environment and Development. Available at: <http://pubs.iied.org/pdfs/17262IIED.pdf> (Accessed: 3 January 2016)
- Verbrugge, B. and Besmanos, B. (2016) 'Formalizing artisanal and small-scale mining: Whither the workforce?', *Resources Policy*, 47(3), pp. 134–141. doi: 10.1016/j.resourpol.2016.01.008
- Verbrugge, B. (2014) 'Capital interests: A historical analysis of the transformation of small-scale gold mining in Compostela Valley province, Southern Philippines', *The Extractive Industries and Society*, 1(1), pp. 86–95.
- Verbrugge, B. (2015) 'The Economic Logic of Persistent Informality: Artisanal and Small-Scale Mining in the Southern Philippines', *Development and Change* 46(5), pp. 1023–1046. doi: 10.1111/dech.12189
- Verbrugge, B. (2016) 'Voices from below: Artisanal and small-scale mining as a product and catalyst of rural transformation', *Journal of Rural Studies*, 47, pp. 108–116.
- Verbrugge, B. (2017) 'Towards a negotiated solution to conflicts between large-scale and small-scale miners? The Acupan contract mining project in the Philippines', *The Extractive Industries and Society*, 4, pp. 352–360.
- Visaya-Ceniza, R.A. (2013) 'An Exploration of the Psychosocial Health Status of Women Artisanal Miners in Mindanao, Philippines', *Procedia – Social and Behavioral Sciences*, 91, pp. 505–514.
- Wahl, A. and Bull, G. (2014) 'Mapping Research Topics and Theories in Private Regulation for Sustainability in Global Value Chains', *Journal of Business Ethics*, 124 (4), pp. 585–608.

Wakefield, J. (2016) "Apple, Samsung and Sony face child labour claims" 19 January. Available at: <http://www.bbc.co.uk/news/technology-35311456> (Accessed: 12 March 2018)

Wallerstein, I. (1974) *The Modern World System I: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century*. New York: Academic Press.

Wallerstein, I. (1986) 'Societal Development, or Development of the World-System?', *International Sociology*, 1(1), pp. 3–7. doi: 10.1177/026858098600100102

Walton, A. (2010) 'What is Fair Trade?', *Third World Quarterly*, 31(3), pp. 431–447. doi: 10.1080/01436597.2010.488474

Wang, L. and Gordon, P. (2011) 'Trust and institutions: A multilevel analysis', *Journal of Behavioral and Experimental Economics (formerly The Journal of Socio-Economics)*, 40 (5), pp. 583–593.

Webber, J., (2011) 'How much more do growers receive for Fair Trade-organic coffee?' *Food Policy*, 36(5), pp. 678–685.

Webster, L. and Fidler, P. (eds.) (1996) *The informal sector and microfinance institutions in West Africa* (English). World Bank regional and sectoral studies. Washington DC: The World Bank. Available at: <http://documents.worldbank.org/curated/en/511141468769863474/The-informal-sector-and-microfinance-institutions-in-West-Africa> (Accessed: 15 June 2016)

Weller, S. A. (2006) 'Networks, commodity chains and crisis: the impact of Fiji's coup on garment production networks', *Environment and Planning A*, vol. 38, no. 7, pp. 1249–1267.

Wels, T.A. (1983) 'Small-scale mining – The forgotten partner', *Transactions of the Institution of Mining and Metallurgy*, 92(1), A19–A27.

Wenger, E. (2000) 'Communities of Practice and Social Learning Systems', *Organization Articles*, 7(2), pp. 225–246.

Wetzel, R. and Van Gorp, L. (2014) 'Eighteen shades of grey?: An explorative literature review into the theoretical flavours of organizational change research', *Journal of Organizational Change Management*, 27(1), pp. 115–146.

WFTO (World Trade Fair Organization) (2016) *History of Fair Trade*. Available at: <https://wfto.com/about-us/history-wfto/history-fair-trade> (Accessed: 19 June 2016)

World Gold Council (2012) *Conflict-Free Gold Standard*. London: World Gold Council. Available at: http://www.gold.org/sites/default/files/documents/Conflict_Free_Gold_Standard_English.pdf (Accessed: 11 May 2015).

Willis, K. (2011) *Theories and Practices of Development, perspectives on development*. 2nd. edn., Oxon: Routledge.

World Bank (1992) *Strategy for African Mining*. Washington DC: World Bank. World Bank Technical Paper No. WTP 181.

World Bank (2001) *Attacking Poverty. World Development Report*. Washington DC: Oxford University Press.

World Bank (2009) *Mining Together: Large-Scale Mining Meets Artisanal Mining, A Guide for Action*. Washington DC: World Bank.

World Bank (2017) *Sudan. The World Bank Data*. Available at: <https://data.worldbank.org/country/sudan> (Accessed: 14 July 2017).

World Gold Council (2018) Gold mining map. Available at: <https://www.gold.org/about-gold/gold-supply/gold-mining/gold-mining-map> (Accessed: 14 February 2018)

World Gold Council (2018a) *Who we are*. Available at: <https://www.gold.org> (Accessed: 11 January 2018)

World Gold Council (2018b) *Gold supply and demand data*: GDT Statistics XLSX [Table]. Available at: <https://www.gold.org/data/gold-supply-and-demand> (Accessed: 10 February 2018)

World Gold Council, (2018c) *Major global trading hubs*. Available at: <https://www.gold.org/what-we-do/gold-market-structure/global-gold-market> (Accessed: 11 January 2018)

Yakovleva, N. (2007) 'Perspectives on female participation in artisanal and small-scale mining: a case study of Birim North District of Ghana', *Resources Policy*, 32, pp. 29–41.

Yakubu, B.R. (2003) *Regularisation of small-scale mining in Ghana: technical approach and its shortcomings*. Communities and Small Scale Mining (CASM) Third AGM and Learning Event. Elmina, Ghana.

Yeung, W-C. and Coe, N. (2014) 'Toward a Dynamic Theory of Global Production Networks', *Economic Geography*, 91(1), pp. 29–58.

Yin, R.K. (2003) *Case Study Research: Design and Methods*. 3rd edn., Thousand Oaks, CA: SAGE Publications.

Yin, R.K. (2009) *Case Study Research, Design and Methods. Applied Social Research Methods 5*. 4th edn., London: SAGE Publications.

Zack-Williams, A. (1995) *Tributors, Supporters and Merchant Capital: Mining and Underdevelopment in Sierra Leone*. Aldershot: Avebury.

Zucker, L.G. (1986) 'Production of trust: Institutional sources of economic structure, 1840–1920', *Research in Organizational Behavior*, 8, pp. 53–111.

Zukin, S. and DiMaggio, P. (1990) *Structures of capital: The social organization of the economy*. New York: Cambridge University Press.

Appendices

Appendix 1 Overview of ethical mineral certification schemes for artisanal and small-scale mining

1.1 Fairtrade Gold and Fairmined Gold

In 2006, the Colombian-based NGO, the Alliance for Responsible (ARM) and the internationally-recognised Fairtrade Labelling Organization (FLO), collaborated to develop the *Standard Zero for Fair Trade Artisanal Gold and Associated Silver and Platinum*, a set of draft principles adapted from Fairtrade certification standards for agricultural producers. On the back of this development phase the joint Fairtrade and Fairmined Gold Standard (FFGS) surfaced in 2009. Implemented solely in Latin America, the standard sought to facilitate market access to artisanally-mined gold produced in a socially and environmentally-responsible manner (Maldar, 2011). In 2011, the first certified gold went on sale in the UK. Despite claims made on the original website that the Fairtrade and Fairmined Gold Standard ‘successfully brought about the empowerment of miner’s organisations, raised awareness of the issues in the ASM sector and provided businesses with the first traceable source of certified gold’ (Fairtrade and Fairmined Gold, 2014), in 2013, the partnership came to an end. Although the split is portrayed as organic (Fairtrade Gold, 2014a), coming at the end of a three-year pilot phase, the issue of mass balancing certainly had an influence. While ARM were in favour in order to increase the demand for certified gold, a number of Fairtrade stakeholders opposed the move arguing that it undermined the ‘purity’ and image of the combined label in the ‘emerging ethical jewellery market’ (Choyt, 2013). Since this time, however, the Fairtrade Gold Standard now permits mass balancing provided that the final gold product is not labelled ‘Fairtrade in any consumer or public facing communication or marketing’ (Fairtrade International, 2013, p. 11).

Under both the, now separate, Fairmined Gold and Fairtrade Gold standards, once certified, mining organisations receive a guaranteed minimum of at least 95 per cent market value for their gold. This is calculated according to the London Bullion Market Association (LBMA) price fix (the price of gold which is set twice daily by the LBMA). Certified mining cooperatives are also paid a ‘social premium’ for their gold which is used for community development projects. Under Fairmined Gold the social premium is set at USD 4,000 per kg. An additional USD 2,000 per kg is also payable (making USD 6,000 per kg in total) as an ‘ecological premium’ if the operations meet certain environmental criteria such as mercury-free production. The same is true for Fairtrade Gold, except that the additional ecological premium is calculated based on 15 per cent of the LBMA fix. It is also noted in the Fairmined Gold Standard that ‘ARM reserves the right to change the level of the Premium’ with any such change being negotiated with miners (ARM, 2014, p. 44). The overarching aim of Fairtrade Gold is to create transparent and traceable ‘supply chains’ and help mining organisations forge long-term business relationships with their commercial partners. Proponents of Fairtrade Gold argue that ‘middlemen’ trap miners in poverty through poor prices, and that linking certified producers with Northern jewellers will resolve this problem (Hilson, 2008; Maldar, 2011; Fairtrade Gold, 2014b). As Table 5 and 6 summarise, Fairtrade currently has three

certified gold mining cooperatives in Peru, Kenya, and Uganda, the latter two comprising a meagre 62 miners in total. The organisation is also working with ‘other pilot groups in Peru, Uganda, Kenya and Tanzania to achieve Fairtrade certification’ (FLO, 2017). Furthermore, through their three-year (2012-2015) Comic Relief funded pilot project *Extending Fairtrade Gold to Africa* in Kenya, Uganda, and Tanzania (which ARM withdrew from at the start of year two) FLO also claim to have directly or indirectly reached over 1,100 miners. The specific project activities included: training miners in occupational health and safety and other aspects of the Standard; developing a network of ASM stakeholders to promote the sector; engaging with NGOs, miners, and government to influence decision-making; developing a market of Fairtrade Gold from Africa with ethical jewellers in Europe; and increasing awareness amongst European consumers on ethical and Fairtrade issues related to gold (Fairtrade Gold, 2015; Kessler et al., 2015).

Focussing primarily on Latin American ASM, though with ongoing pilot projects launched in Senegal and Burkina Faso (ARM, 2017), the Alliance for Responsible Mining defines itself as a ‘global pioneering initiative’ (ARM, 2014a). Established in 2004, it is a network of experts and partners working towards the sustainable development of ASM. Since the 2013 split, it has used the Fairmined Gold Standard to fulfil its objectives. Like Fairtrade Gold, certified mine operators receive a guaranteed price and premium to be invested in community projects. Through the Fairmined Standard, ARM works to ensure that minerals are extracted ‘responsibly’ and to offer the jewellery industry with a guarantee of traceability and assurance of minimum production standards (ARM, 2014b; ARM, 2014c). Along with the impacts shown in Table 5, as of 2016 it is claimed over 13,000 miners and their families have benefitted from ARM’s inventions, and as of May 2017 there are eight mining cooperatives listed as being Fairmined certified on their website (see Table 6). Curiously, three artisanal and small-scale mining organisations (ASMOs)¹⁵⁹ that were certified under the original FFGS and again under the separate Fairmined Gold and Fairtrade Gold standards (Hilson and McQuilken, 2016), no longer appear listed on either of the organisations’ websites or material after 2015. Perhaps signalling a ‘graduation’ from these schemes or a move in a different direction with both SOTRAMI and AURELSA listed as partners in the case studies on the Swiss State Secretariat for Economic Affairs’ (SECO) and Swiss Better Gold Association’s (SBGA) Better Gold Initiative’s website (BGI, 2017).

1.2 Maendeleo Diamond Standards™

Finally, in this appendix contextualising the three certification schemes that are the focus of this thesis; an overview of the DDI’s *Maendeleo Diamond Standards™*. Following a meeting of representatives from the United Nations, national governments, international donors, NGOs, and the diamond industry the Diamond Development Initiative surfaced in 2005. After a long inception and pilot phase, the Standards were launched in 2016 to address the social and economic challenges facing informal artisanal and small-scale miners in Africa and Latin America through formalisation. Registered as a non-profit organisation in

¹⁵⁹ The three ASMOs are: 1) *Sociedad de Trabajadores Mineros S.A* (SOTRAMI) in Peru; 2) *Comunidad Aurifera Relave S.A.* (AURELSA) in Peru; and 3) *Cotapata Mining Co-operative* in Bolivia.

the United States, the initiative is overseen by a Board of Directors with representatives from industry, academia, government and civil society and receives funding from a range of sources including international donors, producers, retailers, industry associations and foundations. Crucially, its activities take a broader approach to supporting the sector with certification being just one mode by which they aim to 'transform ASM by bringing this largely unregulated informal sector into the formal economy in ways that benefit miners, their communities, regional and national economies, and the diamond and jewellery industry' (DDI, 2018a). There are over eight separate ASM-related projects alone listed on their website, ranging from education, land reclamation, mechanisation and environmental stewardship programmes, to developing a documentary film on property rights and artisanal diamond mining in the Central Africa Republic and Guinea (DDI, 2018b).

One of the DDI's overarching aims is to further the reach of the Kimberley Process Certification Scheme (KPCS). Designed to prevent the trade in conflict diamonds defined as 'rough diamonds used to finance wars against government' (KPCS, 2017) through a chain-of-custody certification mechanism, the DDI (2017) asserts that the KPCS 'does not address issues of poverty and exploitation'. To extend the reach of the KPCS, the DDI undertakes activities in five key areas: 1) Registration, by working with local governments to register mines (including diggers, traders and auxiliary workers) and where possible provide them with a legal status to bring them into the formal economy – as is reported on their website in 2015 DDI registered 108,000 miners at 457 mining sites in the DRC alone, 57 per cent of which were previously unknown (DDI, 2018c); 2) Organisation, by helping miners form associations and cooperative in order to access training and support services and improve their bargaining power; 3) Technical improvements, by implementing projects to improve mining methods, mechanisation, banking and savings programmes; 4) Development support, to compliment the formalisation process by helping with community projects such as the provision of basic services and schooling, and, finally; 5) Certification, the aim of which is to provide assurance that diamonds produced at a conforming site are responsibly produced and ethically sourced helping miners reach international markets and improve their working and living conditions (DDI, 2018a).

DDI's certification efforts have been relatively limited to date, having only publicly released the MDS document in April 2016. In a similar approach to the Fairmined, and Fairtrade Standards, the MDS prescribe minimum conditions of production regarding health, safety and the environment, traceable supply chains free from conflict, workers' rights, and 'fair pricing' set through dialogue and participation between miners and buyers (DDI, 2016a, 2016b, 2016c). The DDI currently works with 14 mining organisations in Sierra Leone, though there are plans to scale up and extend certification to the DRC and in West Africa. Certainly the effects of the 2014 Ebola outbreak in Sierra Leone resulted in slowing progress with the DDI implementing a *Sensitization, Support and Safeguards* project to support miners and their families (DDI, 2018b), and noting in their 2016 *Maendeleo Diamon Standards™ Frequently Asked Questions* document that for interested buyers wishing to purchase certified stones that 'artisanal diamond production produces an uncertain number and quantity [quality] of diamonds, therefore

participation is limited. DDI does anticipate that it will be possible to invite new buyers to participate in the MDS system in late 2016-2017' (DDI, 2016b, p. 2).

Appendix 2 Semi-structured interview template

Interview Schedule (Version 5.0 (09/02/2015))

The questions in the interview schedule are not differentiated between organisations and miners, some questions are not relevant for one or the other, while others will be re-phrased as necessary.

Introduction and Consent

1. Introduce the research generally and researchers.
2. Present the participant with the PIS (if they have not already been given it) and the consent form and give them time to read and understand both (10 minutes). Explain the information verbally in PIS and consent form if needed.
3. Ask the participant if they have any questions or clarifications. Answer as required.
4. Reassure participant that everything will be kept confidential and anonymous and ask if they mind being audio recorded for the purposes of transcription only.
5. Ask participant if they are happy to proceed with the interview and be part of the research?
6. Have the consent form signed or consent obtained verbally.

Interview begins

1. Start audio recording if participant has given permission.
2. Thank participant for agreeing to take part and obtain recorded verbal consent if required.

Introductory questions

1. Can you please tell me a little about yourself in relation to your involvement in mining/the organisation?
2. Can you tell me your story of how you started as a miner and got to where you are now?
3. What is the history of mining in this area?

Network

1. Who / where do you sell your diamonds/gold to?
2. How many people does the diamonds/gold get bought and sold to until it reaches PMMC?
3. What mining / NGO other organisations do you work with / have been in contact with?
4. Can you explain to me how the diamonds / gold get from your mine to market?
5. Who buys and sells the gold / diamonds and prices/margins?
6. Who do you work with?

Embeddedness

1. How long have you worked as a miner?
2. What did you do before?
3. When did mining begin in this area?
4. How long has the organisation been working with ASM and what motivated it to get involved?

Power

1. Who do you think has the most power / is the most powerful in your network you have described?
2. What is the role of government / institutions in having power to regulate the sector?
3. What power do organisations like Fairtrade have to influence the sector?

Value

1. How do you ensure you get a good price for your gold/diamonds?
2. What costs do you incur?
3. How are you more competitive than other miners?
4. What technology do you use?
5. How is value created, captured and enhanced in the chain of supply?
6. How are you paid to work as a miner?

Certification

1. Can you explain to be more how the certification works? What is the mode of connection / what you are trying to achieve and why?
2. What has been done so far?
3. What are the benefits / issues?
4. How have you identified, chosen and approached the different mining groups for certification?
5. Do you think there are alternatives to certification?
6. Who holds the licence?
7. How do you obtain a licence?

Close Interview

1. Thank participant for their time, remind them they can withdraw at any time and how to get in touch. Give remuneration as necessary.
2. Ask whether the organisation would be interested in receiving policy briefing at the end of the research.

Appendix 3 Ethical review outcome



Mr James McQuilken
Surrey Business School
Faculty of Business, Economics and Law

Research Integrity and
Governance Office
Sandle House
Guildford, Surrey GU2 7XH UK

T: +44 (0)1483 68 9103
F: +44 (0)1483 68 3791

ethics@surrey.ac.uk
www.surrey.ac.uk

19 December 2014

Dear Mr McQuilken

UEC ref: EC/2014/151/FBEL

Study Title: 'Ethical' Mineral Schemes in sub-Saharan Africa: A Viable Poverty Alleviation Strategy?

On behalf of the Ethics Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the submitted protocol and supporting documentation.

Date of confirmation of ethical opinion: 19 December 2014

The final list of documents reviewed by the Committee is as follows:

Document	Version	Date
Covering letter from researcher in response to queries from the Committee, sent 11 Dec 2014		15 Dec 2014
Protocol Cover Sheet		15 Dec 2014
Protocol	2	15 Dec 2014
Interview Schedule		Sub. 15 Dec 2014
Recruitment email		Sub. 15 Dec 2014
Participant Information Sheet - 1		Sub. 15 Dec 2014
Participant Information Sheet - 2		Sub. 15 Dec 2014
Consent Form		Sub. 15 Dec 2014
Fieldwork plan		Sub. 15 Dec 2014
Risk Assessment		Sub. 15 Dec 2014
Research Insurance Proforma		Sub 15 Dec 2014



THE QUEEN'S
ANNIVERSARY PRIZES
FOR HIGHER AND FURTHER EDUCATION
2011

This opinion is given on the understanding that you will comply with the University's Ethical Principles & Procedures for Teaching and Research.

If the project includes distribution of a survey or questionnaire to members of the University community, researchers are asked to include a statement advising that the project has been reviewed by the University's Ethics Committee.

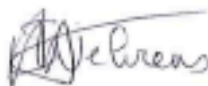
If you wish to make any amendments to your protocol please address your request to the Secretary of the Ethics Committee and attach any revised documentation.

The Committee will need to be notified of adverse reactions suffered by research participants, and if the study is terminated earlier than expected with reasons. Please be advised that the Ethics Committee is able to audit research to ensure that researchers are abiding by the University requirements and guidelines.

You are asked to note that a further submission to the Ethics Committee will be required in the event that the study is not completed within five years of the above date.

Please inform me when the research has been completed.

Yours sincerely



Dr Sophie Wehrens

Research Integrity and Governance Officer, Research & Enterprise Support



THE QUEEN'S
ANNIVERSARY PRIZES
FOR HIGHER AND FURTHER EDUCATION
2011

Appendix 4 Introductory letter



Our Ref: DG/jn

21/04/15

To Whom it May Concern

Surrey Business School
Guildford, Surrey GU2 7XH UK

Professor David Goss
BA (hons), PhD, PhD (hnc)

Head of Surrey Business School
Professor of Entrepreneurship

T: +44 (0)1483 683116
E: D.Goss@surrey.ac.uk

www.surrey.ac.uk/sbs

Dear Sir/Madam,

Re: James McQuilken and Angelique Gatsinzi

This is to confirm that James McQuilken and Angelique Gatsinzi are registered as PhD students at Surrey Business School, University of Surrey, UK. They are undertaking work under the supervision of Professor Gavin Hilson, a senior employee of the School. They have the support of the School for their current project. Please feel free to contact me if you have any further questions.

Yours faithfully

Professor David Goss
Head of Surrey Business School



THE QUEEN'S
ANNIVERSARY PRIZE
For Higher Education
2015

Appendix 5 Participant information sheet

Participant Information Sheet – 1

Version 5.0 (09/02/2015)

Introduction

I would like to invite you to be part of a research project. My name is James McQuilken and I am a PhD researcher at the University of Surrey Business School, United Kingdom. Before you decide to be part of the project, in which we will have a discussion, it is important that you understand exactly what will be involved and how your participation can be of benefit to you.

Please therefore take the time to read the following information and be sure that you understand it fully. If you have any questions, comments or if anything arises that you wish to discuss in relation to the proposed work then please do not hesitate to ask (contact details are at the end of this sheet). You may also discuss the proposed research with others if you wish.

What is the purpose of the study?

This study seeks to broaden the understanding of artisanal and small-scale mining groups operating in rural sub-Saharan Africa, the dynamics of their operations and the intricacies of the value chains they are part of. Key stakeholders from the U.K and Ghana in the artisanal and small-scale mining sector are invited to have a discussion with myself as lead researcher.

The research will offer much need perspective on how artisanal and small-scale miners, many of whom are trapped in poverty, can be supported through mineral certification schemes. Clear and tangible recommendations for practitioners will also be drawn from the research and disseminated within the field in order to enhance existing schemes and facilitate the improvement of new ones. The goal is to ensure artisanal and small-scale miners are better supported and work towards formalisation.

Why have I been invited to take part in the study?

You are a valued stakeholder in the artisanal and small-scale mining value chain. Your role, experience, understanding and thoughts about the sector are highly valuable to this research in order to understand the dynamics of the sector better and the impact of current and future mineral certification schemes.

Do I have to take part?

No, you do not have to participate. There will be no adverse consequences if you decide not to participate. You can withdraw at any time of the process without the need to provide a reason. And any information you have provided up to that point would be removed from the study and deleted.

What will happen to me if I take part?

You will be asked to meet with myself, at a time and in a place convenient to you, to talk and discuss your role, experience, understanding and thoughts about the small-scale mining sector and mineral

certification schemes. This may, or may not (depending on your discretion) reflect the broader position of your organisation within the sector.

The discussion will be in the form of a semi-structured interview in which I will have a set of predetermined questions I would like to ask. However there is great flexibility in how the discussion can unfold. Depending on your own personal experience and position the discussion can cover many topics and it will be up to us, and most importantly you, to decide what you wish to discuss and what is important.

What will I have to do?

If we have not done so already, we will organise an appropriate date, time and place to meet that is convenient to you.

What are the possible disadvantages or risks of taking part?

There is no risk in taking part. All information and anything you say will be kept anonymous. When the discussion data is stored, analysed and written about it will always be kept anonymous. You do not have to answer a question if you do not wish to and you may withdraw from the interview at any time. All and any collected information up to that point will also be destroyed and not included in the research.

What are the possible benefits of taking part?

The research will provide detailed data on ASM and policy recommendations. Government, policy making and certification organisations involved with artisanal and small-scale mining will be able to benefit by having access to the findings and recommendations of the research. The findings may be incorporated into development plans to improve the operations and thus the lives of impoverished miners, and their families, working in the small-scale gold mining sector.

What happens when the research study stops?

The findings from the research will be published as a PhD thesis and feature in academic publications and presentations. Neither your name nor any information that can be used to identify you will ever appear in the thesis, articles, or presentations and as such your participation in the research will be and remain anonymous. At the end of the research in October 2016 it is intended that a briefing note synthesising the main findings and providing key recommendations will be distributed to all interested parties. It would also be my pleasure to give a tailored presentation to any organisation or group of people that may be interested in order to disseminate the findings and influence policy and practitioners.

What if there is a problem?

Any complaint or concern about any aspect of the way you have been dealt with during the course of the study will be addressed; please contact myself, James McQuilken or Professor Gavin Hilson via the details at the end of this document.

Will my taking part in the study be kept confidential?

Yes. All of the information you give will be made anonymous so that anyone reading the findings from the research will not know who said what and who has contributed to it. All data will be stored securely in accordance with the UK Data Protection Act 1998. Any personal data (first name, job title and interview location) will be kept until the end of the research when the researcher has graduated (end of 2016). It will then be deleted securely in accordance with UK Data Protection Act (1998). Non-personal data (written, anonymised transcripts of our interview) will be kept for at least ten years (2024), or until it is no longer needed to enable further research if required.

Contact details of researcher and supervisor:Researcher

James McQuilken MSc, BSc

Ghana Tel: [REDACTED]

[REDACTED]

Email: j.mcquilken@surrey.ac.uk

Surrey Business School, University of Surrey

Guildford, GU2 7XH

Principal Supervisor

Professor Gavin Hilson

Tel: +44(0)1483 686300 (switchboard)

Email: g.hilson@surrey.ac.uk

Surrey Business School, University of Surrey

Guildford

GU2 7XH

Who is organising and funding the research?

I am organising the research with assistance from my principal supervisor Professor Gavin Hilson - the leading academic authority on ASM in Ghana and a world-renowned academic. The research is being funded with a scholarship from the U.K Economic and Social Research Council (<http://www.esrc.ac.uk/>).

Who has reviewed the project?

The project has been reviewed and received a favourable opinion from the University of Surrey Ethics Committee.

Thank you kindly for taking the time to read this Participant Information Sheet and I look forward to speaking with you.

Appendix 6 Risk register

Risk	Person at risk	Probability	Impact	Risk Rating	Mitigation Strategy	New Risk Rating
Ebola outbreak in Ghana	Researcher & Participants	Low – All official advice, at the present time, states there is a very low likelihood of being infected with Ebola while travelling in Ghana.	High – If an outbreak did occur may have to consider moving study to another country.	High	As of 18/11/2014 there have been no reported cases of Ebola in Ghana. As stated on the NHS website (2014): ‘the likelihood of catching Ebola ... is considered very low unless you have travelled to a known infected area and have had direct contact with a person with Ebola-like symptoms, or had contact with an infected animal or contaminated objects’. In addition advice in October 2014 from Public Health England (2014) states: ‘Overall the risk to visitors to affected areas is low, providing prevention measures are followed whilst in country.’ Given that I am travelling to Ghana, a country with no reported cases thus far, and that my research activities do not concern anything to do with healthcare the likelihood of infection is very low. However given the origin of epidemic in nearby West African countries and the freedom of travel between ECOWAS nations there may be a slightly higher level of risk of Ebola in Ghana than in the U.K. In order to mitigate this risk I will check online for updates on travel advice to West Africa and Ghana from the Foreign Office (2014) once a week as well as national news outlets to keep aware of any changing circumstances and follow official advice. In addition I will take the following precautions as recommended by the Public Health England commissioned NaTHNaC (2014) which includes: - regular and strict hand washing regimes - avoiding close contact with live or dead wild animals - avoid consumption of bush meat - washing and peeling vegetables and fruits before consumption. - Avoid contact with symptomatic patients. If an outbreak did occur and travel advice to Ghana changed significantly then it might disrupt the research and as a last resort mean not continuing with the research in Ghana. It may be possible to continue some interviews online and perhaps in another country. Ensuring I stay well networked with organisations and those that are working on ethical mineral schemes in other African counties (such as Fairtrade Gold who are currently piloting in Kenya) will help to mitigate the impact should an Ebola outbreak occur in Ghana. In addition, ensuring I complete parts of the research in rural areas with impoverished communities (who are less likely to have access to the internet and therefore be able to be interviewed remotely) as a priority will ensure enough data is collected from these participants up front. As a final point, it is worth noting that some of these practices (keeping good general sanitary and hand washing practices) are usual advice for travellers to developing countries given the higher risk of infections and diseases. It is important therefore to be aware of the risk, but stay informed and be guided by objective facts from official channels and not be swayed by sensationalist media reporting.	Low
Personal health, safety & security	Researcher	Low	Medium	Medium	Though the researcher has considerable experience of travelling and working in developing countries, including Ghana, it is important that this knowledge and experience is refreshed and up to date with current travel advice and any unfolding events that may influence safety and security. Thus advice from the UK Foreign Office (2014) and local official news outlets will be followed and regularly checked for updates. A fully charged mobile phone with local SIM card and emergency numbers will be carried at all times. Guidance from the local research assistant will always be considered, and the PhD supervisor and a trusted driver will always know the whereabouts of the researchers through regular contact. In terms of health one of the biggest risks is Malaria, anti-malarial tablets will be taken throughout the research in line with medical advice and precautions such as using sprays, sleeping nets, wearing long sleeves and spraying rooms with off-the shelf insecticide will be taken. A personal medical and first aid kit will also be taken with the researcher and carried in a day bag at all times.	Low

					In addition to these measure the University of Surrey (2014) 'Safety When Travelling Abroad & in the UK' guidance for staff has been read, and will be again, before travelling and the risk assessment contained within this document will be completed before travel in line with University policy.	
Mine site safety	Researcher	Low	Medium	Medium	In order to ensure the safety of the research at mine sites the following additional precautions will be undertaken: - Wear protective clothing such as walking boots and sun hat when at mine sites. - Staying with the mine owner at all times and/or following instructions from mine owner and miners about the safe (and unsafe) areas of the site. - Stay with local research assistant. - Have an exit strategy in mind in case need to leave the site quickly (e.g. easy and known route back to vehicle). - Have numbers of local emergency services and basic mobile phone (i.e. not smart phone) with battery and signal on person at all times. - Only visit sites during the day, in good light and with permissions. - Take water and sun cream and stay out of the midday sun/heat. It should be noted that the researcher has visited mine sites in Ghana before and that all of the sites are above ground – the researcher will not be going underground.	Low
Confidentiality and anonymity	Participants	(probability that confidentiality will be breached) Low	(Impact that breaching confidentiality would have) High	High	In order to ensure confidentiality and anonymity of participant's data will be stored in accordance with the UK Data Protection Act (1998). In this way recordings and transcripts will be assigned a numerical code and a separate matrix, also stored separately, will detail only necessary personal details of participant's such as their name, affiliated organisation and the area location of the interview to serve as a reminder to the researcher. This includes any photos that may give away the identity of participants. In addition, when discussing and writing about the work at any time during and after the research, participants will be given pseudonyms and referred to in a manner that does not reveal their identity. Through the participant information sheet and consent form participants will be made aware of these confidentiality and anonymity safeguards and free, prior and informed consent will be obtained before commencing any and all interviews. Participants will also have the full contact details of the researcher enabling them to use their right to withdraw from the research at any time and for any reason without having to disclose why.	Low
Safety of Participant	Participants	(Probability that safety of participant will be breached) Low	(Impact that breaching safety of participant) High	High	In order to ensure the safety of participants the researcher will ensure that interview locations, especially for the more vulnerable miners, are at the discretion of participants in a safe environment. When invited into participant's homes all local customs will be followed. The same level of safety precautions will be taken as for the researcher's safety where appropriate and within the means of the researcher (i.e. it is not possible for the researcher to equip every miner with health and safety equipment where it is absent). Some of the information and data collected may be sensitive and thus, in line with the confidentiality and anonymity precautions outlined above, will be stored in accordance with the UK Data Protection Act (1998) and participants will not be explicitly referred to in any subsequent work or to any other participants.	Low
Loss of Data	Researcher	Low	High	High	Whilst storing all data inline with UK Data Protection Act 1998, the researcher will keep back up copies on separate USB sticks, cloud storage devices and the Surrey University computer drive.	Low

Appendix 7 Field note diary entries

7.1 'Breaking day' at Tarkwa *galamsey* site

Evening Reflection - 20th July 2015

Upon arriving at the top of the site by the shop and the canteen, instead of the usual 1/2 taxis there were about 15 cars, trucks and expensive 4x4s including a Porsche [Cayenne] with a Togo number plate. Clearly the 'big men' are in town. I walked with [field assistant] down the steep hill where there were bags (old woven plastic sacks) weighing reportedly 50/100kg. People/'carriers' were carrying the sacks on their backs and ½ bags on their heads up the hill for 10 cedis per bag to the top and 5 cedis for halfway. Women carried pans on their heads with some even having babies on their backs. Each bag was filled with uncrushed ore. The distance was about 800 m/1 km up slip[pery] mud.

We met [name] (the processing site owner at [village name]) who turns out is the sponsor for the power plant/generator on site which supplies about 40 shafts with power. He sponsors about 50,000 cedis for 3 weeks (diesel, chop, travel etc. of generator man, maintenance) and was collecting 400 bags [minimum 50kg each] total. (20 tonnes!) Spoke to the elders of the village [name] who confirmed the activity outside the wall was illegal/that they were somehow covered by the 'umbrella' of [name of concession] licence in an informal agreement. Also, they said Mr [name] is an elected caretaker by the Chiefs and elders to look after the mine.

Once finished headed to the site [in] the distance & after walking through the mass of low thatched/makeshift roofs covering the vertical pits a mass of about 1,000-2,000 people could be seen. Grouped around the heads of the mine sites in the distance overlooking this were some of the sponsors and security there for the day to make sure 'things run smoothly'. In fact, in the 30 mins we were there two squabbles broke out lots of shouting and pushing 'it's about money' we were told. We stood there & talked with an owner of a different mining site who was there to help his friend. He was a big guy and explained lots of things (recorded).

Finally, an older man came over (60+) who was the land owner. He gave a brief history of the land and said it is full of gold. Perhaps he mistook us for investors as he said that despite the Chinese and Ghanaians ripping the community off in the past (actually he said not benefiting) there was still some land he would give us if we were interested. He also mentioned that the land was currently for the youth. We walked back up the hill and then jumped into the back of a [flatbed] truck laden with bags back to the main road. I estimated about 50 bags [but] the truck was not full to capacity. It's hard to tell how many bags would be removed that day. But at least 20 trucks full! With a conservative 50 bags each that makes 1,000. But Mr [name] has 400 for himself:

20 x 50 = 1,000 bags

1,000 x 50 kg = 50,000

50,000 kg = 50 tonnes

50 - 20 (the sponsors bags) = 50 - 70 tonnes!