A Baseline Study of ASM Communities

- Report

(In the Context of Mitigating the Impacts of COVID-19 in the ASM Communities in KBK Districts)

Project Title: "Mitigating the impacts of COVID-19 in artisanal and small-scale mining (ASM) communities in KBK regions of Odisha, India is supported by Extractives Global Programmatic Support (EGPS) and administered by the World Bank Group (www.worldbank.org/egps).
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ACKNOWLEDGEMENTS

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And our sincerest appreciation for the time and involvement for organizing the research from developing data collection guidelines to reporting results, we wish to thank our key researchers, as well as other survey team members and colleagues for their full contribution and professional services in the areas of data collection, entry, analysis, conclusion and report writing.

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CONTENT

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References:

Annexure-1- Data Tables

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MAP of KBK

KBK DISTRICTS IN DIFFERENT COLORS

Executive Summary

The baseline research collected and compiled demographic information, information on local organization and power dynamics, gemstone trade – value chain and supply chain data, local development, women's role, children's role and health information by survey of 387 respondents from ASM workers, focus group discussion of 12 groups of ASM workers, traders, land owners of mines and those in the value chain, key informant interviews referring specific research questions:

Gender and Age Group of Respondents:

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Out of 387 respondents 50.13 percent were males and 49.87 percent were females. About 36.87 respondents belonged to the age group of 18-30 years who were in the formative age of making career and families and 26.36 percent respondents were single to be married.

Housing and Sharing of Living Room:

36.95 percent of respondents were sharing one living room with more than one person, and 39.18 percent respondents shared one living room with four persons while 12.37 percent of the respondents shared a living room with about 3 persons. In this situation there was a little chance to maintain isolation in the households in case there is virus infection.

Education Level and Scope of Alternative Opportunity:

37.21 percent respondents had no formal education, 17.05 had some primary education, and 13.70 percent had primary level education. This education level of miners had little or no chance of entering into formal sector employment opportunities. Only 10.59 per cent had secondary qualification and 9.30 had tertiary level qualifications, who may be trained for formal sector jobs or entrepreneurship needing higher level education or skill for entry into formal sector opportunities or participating in higher level of ASM value chain where they are to compete with non-ASM qualified, skilled and experienced persons already in the trade.

About 43 percent households had 1 to 5 numbers of school going children. During lock down and closure of schools such children faced problems of coping with online education and many children could not cope up as they had no access to digital equipments. Presence of children and the care burden including providing them additional meals (in the absence of school midday meals) was borne mostly by the female miners.

Access to Information:

17.57 percent households had radio sets and 24.81 percent had televisions. This showed a limited access to information on COVID-19, especially access to government advisories released from time to time.

Productive Assets and Food Security:

Majorities of about 80 percent of the miners were either land less or had less than 2 hectares of land and they were all considered small holder peasant miners.

Majority of the miners were found rearing indigenous poultry birds and small animals like goat, sheep etc. There was a scope to scale up these activities with better breed and skill trainings.

37.47 percent households had less than 1 quintal grains in their storage, 42.12 percent households had 2-5 quintals. Such households could manage maximum of one month to meet

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their food needs from their existing stock during the lock down period of COVID-19. Majority of the miners faced severe food stress due to the loss of their earning from a mix of mining, farming and small businesses and quick exhaustion of food stocks.

Changes in Household Income and Expenditure Pattern: Impact of COVID-19

About 60 percent of the miner households had a monthly income ranging US$ 40 to 125 prior to COVID-19

Comparison of average household income from different sources calculated prior to COVID-19 and during COVID-19 lockdown period showed that there was a 67.53 percent fall in income from different activities pursued by the miner households (Table 25.2).

Comparison of average value of household expenditures prior to COVID-19 and during lockdown period showed a drastic fall in expenditure pattern which was about 66.69 percent. As the fall of income was 67.53 percent, miner households had little money at hand to spend (Table 25.3).

Nature of Mining Occupation:

The ASM miners of gemstone had no valid mining license as the respondents shared that they were involved in mining informally and it was their traditional occupation for generations and it picked up since early 1990s in a larger scale. Miners engaged in mining of gold considered their activity as parastatal.

Organization Membership and access to financial capital assets:

39.79 percent respondent mostly female miners were members of Self Help Groups (SHGs). Miners had no independent association to raise their issues.

39.79 percent of ASM miners had access to financial capital assets from SHGs and all of them were female miners. 54.78 percent used their own savings in cash for mining and 86.64 percent used their savings from livestock and harvest sales proceedings in mining activities.

50.39 percent of the miners had received financial support from traders, brokers and land owners for mining. The amount varied from INR 500 to INR 1000 per week which was later adjusted when they were paid for their work

Major Constraints to access productive Assets:

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74.42 percent miners lacked the technical and managerial skills to access to assets needed for participation in ASM value chain or availing alternative livelihood opportunity. Ascribed status like caste and tribe back ground of 80.89 percent was considered by them as major constraints in a highly stratified caste society to access to productive assets for mining, business, agriculture and undertaking alternative livelihood activity.

85.53 percent miners were selling their mineral products to unlicensed buyers while 14.47 percent were selling their products to other brokers. 45.48 said that they received very poor price from selling their products.

92.43 percent of the female miners considered their gender as a constraint to negotiate with the market while selling their products. 65.89 percent females faced the constraint of accessing to market information from formal channel about their products.

63.31 percent miners needed information about mineral deposits, 63.53 percent said their information need about markets and 82.95 percent said information on laws and regulations about ASM products they dealt with for years and generations.

The pattern of the spending of mine earnings:

Regarding the spending of mine earnings 10.16 percent of their income from mining was spent at onsite to buy food, alcohol etc. Male miners spent 15 percent of their income onsite while female miners spent only 5.29 percent of their earning. While male miners spent 43.50 percent of their income for buying groceries and food and household amenities, the female miners spent 49 percent of their earning for buying groceries and food and household amenities.

Female miners invariable spent more on health care (3.14 percent of their income), repay of debt (3.98 percent of their income), purchasing clothes (4.0 percent of their income), spending in marriages, religious ceremonies and funerals (6.24 percent of their income), investing in business (7.0 percent of their income), paying school fee and education of children (7.33 percent of their income) than the male miners.

The male miners spent more on investing in housing and house repair/renovation (7.96 percent of their income), buying agricultural assets, land, buying agri-inputs: seeds, fertilizers or hire laborers (10.00 percent of their income) which were higher than the spending by female miners. While male miners saved 2 percent of their income, the female miners' saving was 3.48 percent of their income.

Constraints in participating decision making

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Regarding the constraints the ASM workers face in decision making in mining operation 40.05 percent miners faced the constraint of exclusion in decision making in mining operation. 38.24 percent reported that they faced opposition often resulting in conflict and violence whenever they expressed their views in decision making at the mining operation.

The ASM workers shared that they had no platform or opportunity or channel to participate in decision making in the national government level neither in consultation in review and development nor in consultation in policy, by-laws, regulations, programs for ASM sector.

Miners' Needs, Priorities, and Perspectives on Service Delivery

57.11 percent miners expressed their need for training to improve their skills, 54.78 percent expressed their desire to improve their income from ASM by further value addition and participating in ASM value chain, 77.52 percent talked about the need of equipment and technology for mining operation, 58.66 percent miners mentioned about the need of health and safety information and services to optimize benefits from ASM. 68.48 percent emphasized on alternative livelihood opportunities as practical gender needs.

Formalization of ASM

86.30 suggested for formalization of ASM sector particularly gemstone and gold sectors in India for improvement their access to mineral deposits and services (production and marketing).

Women Miners' Association

There was no woman miners' association in gemstone and gold sectors in KBK region in particular and in India in general. 47.55 percent miners in general and 92.23 percent of the female miners were of opinion that formation of Women's Miner's Association would facilitate their needs being met.

Response about Structural Changes in ASM Sector

On structures (social, cultural, economic, institutional, and legal) that affect ASM to improve the livelihood outcomes of women and men in mining, 68.22 percent suggested changes in the attitude of government departments and agencies, 58.66 percent said transformation in the response of law enforcement agencies and judiciary, 47.03 percent said formation and strengthening of ASM miners' association and 81.14 percent said financial institutions should have a pro-ASM sector approach to support the miners.

The Reasons for people engaged in ASM

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46 percent miners cited the reason of local population growth and economic need, 51.16 percent cited the reasons of natural disasters and climate extremes, 49.61 percent said they were engaged to get supplementary income source and as a means of survival as most of them were impoverished farmers. 74.16 percent were engaged as they had no alternative livelihood opportunity at hand, 60.21 percent were engaged as it was their traditional family occupation and their cultural and social attachments to this lifestyle and its acceptance by their community.

Changes in miners' and their families' lives:

48.32 percent respondents said that by engagement in ASM female miners directly produce income for themselves or their families, raise capital to start businesses that would allow them to quit mining one day. 34.11 percent said that ASM provides them employment during dry season..

ASM income and Education

39.79 percent miners said that income from ASM helped in sending their children to school, while 29.46 percent miners shared that children dropout from school as they are diverted to mining activities and engaged as child labor. 60.21 percent miners said if skill training and second chance education is introduced that would help many adult miners.

Health Care and Hazards in ASM Sector in KBK

26.94 percent of female miners and 38.14 percent of the male miners had high COVID-19 vulnerability due to higher incidences of coronary artery disease and high blood pressure (hypertension) and diabetic conditions among them. Majority of the ASM miners were vulnerable to COVID-19 as they were working in groups/staying in communities where there was little scope to maintain social distance. 9.33 percent were reported COVID-19 positive prior to the survey. 9.84 percent female miners and 17.01 percent male miners mostly from ASM gold sector were exposed to chemical hazards like mercury inhalation

Opportunities

Opportunities of females in ASM Sector:

Regarding the opportunities for female in ASM sector, it was found that about 16.58 percent of female miners had diversified into other economic activities. 34.72 percent had earnings from ASM that had increased their social status. In case of 66.32 percent cases mining income helped them support their households. In 4.15 percent cases females had broken gender barriers to open new pathways for others

Children in ASM

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59.95 percent miners stated that as parents and other family members were involved, so children automatically joined them, 39.79 percent miners shared that as children were not enrolled in schools, they participated in mining for extra income.

Specific recommendations include:

- A study on provision of mining land to ASMs needs to be undertaken and the findings to be shared with relevant stakeholders; areas rich in mineral deposits could be given to local government under the provisions of the Panchayats (Extension to Scheduled Areas) ***Act***, category; and mining license provision authority could be delegated to the local government (village panchayats).
- International best practices, lessons learnt and networking should be carefully examined and replicated into existing mining practices in KBK region.
- If formalization is necessary, engage ASM stakeholders in formalization process and planning to ensure that solutions are workable in practice and do not lead to resistance or conflict.
- ASMs' annual activity information and reporting should be generated on a regular basis via local administration and authorities, their employment roles and responsibilities in the informal sector of labor market should be defined and policy makers and related organizations should be provided with this information and reports.
- The positive impacts of the sub-sectors at the local, provincial and national levels should be clearly demonstrated in order to gain wider support for the mine's presence and thwart attempts to breed dissent amongst vested interests who may be ill-affected.
- Local gold and gemstone marketing procedures should be adequately regulated within a better legal framework and requirements.
- In order to improve hygiene and sanitation level at mine site and prevent contagious diseases among ASMs, deep-pit toilets, sinks and dumping points need to be built and operated that meet health and hygiene requirements.
- Bi-annual health check-ups should be introduced for ASMs given the adverse health effects of their mining practices.
- It is recommended that there needs to be an improvement in ASMs' occupational health and safety knowledge, attitude and practices and thus the regular occupational health and safety awareness-raising and educational activities and required professional services should be organized via professional institutions.
- Possibilities for providing ASMs with social insurance and basic services should be created.
- Innovate and introduce affordable and productivity-enhancing equipment and tools into mining practices that meet occupational health and safety requirements.
- Supporting ASM NGO's activities in working for the protection of ASMs' rights and interests and providing resources for future operational and financial sustainability.
- To maximize long-term sustainable development of the area, it is recommended to make investments to promote economic diversification through alternative livelihood opportunities ensuring participatory and consensual methods.
- Information and communication technology use needs special focus as the COVID-19 pandemic has made it clear that communications technology has to be well developed in the modern world. Therefore, investment in ICT training for small holder ASM producers will enhance their coping capacity in pandemic situation: benefit in term of accessing to information for awareness building, prior preparedness, managing online supply chain, communicating health care providers

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and suppliers of essential health care, hygiene, household necessities and seeking legal help as a protection against GBV.

- Stronger emphasis on education of children in mining along with community mobilization and strengthening online education opportunity, incentive to parents to bring the children from mining back to school and education permanently.
- Emphasis on demonstrated and evidential pilot models of micro-projects on sustainable livelihood opportunity for people in ASM

MAIN REPORT

1. Background:

The old districts of Koraput, Balangir and Kalahandi (popularly known as KBK districts) have since 1992-93 been divided into eight districts: Koraput, Malkangiri, Nabarangpur, Rayagada, Balangir, Subarnapur, Kalahandi and Nuapada. These eight districts comprise of 14 Sub-divdisions, 80 Tahsils, and as many Community Development Blocks. The total number of revenue villages forming part of KBK region is 12,293.

The population of the Kalahandi district as per 2011 census is 1.58 million. Male population is 787101 and female is 789768. SC population is 286580 and ST population is 449456. Sex Ratio (No of female per 1000 male) is 1003. Literacy rate (Rural) is 63 percent and Literacy rate (Urban) is 85 percent.

The major tribes are Khond (45.36%), Gond (21.09%) and Shabar (9.88%). The Khond population is 0.18 million (Orissa review, Census Special 2010). The tribal communities living in Kalahandi have practiced shifting cultivation in the hilly and forested terrains of the district.

Agrarian distress has perpetually affected the KBK region and more particularly the Kalahandi District. It has been in the national and international media since 1985 due to its acute drought, death and hunger-stricken population.

Paradoxically, Kalahandi is not poor in resources; outsiders and merchants flock here for rare gemstones and its business, which unfortunately do not contribute to any local development. Natives have migrated in large numbers to other parts of India.

2. The Need of Baseline Data:

There is a need to improve the understanding of the dynamics of ASM activity in KBK region in order to reduce its perennial poverty, promote sustainable rural livelihoods, including

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alternatives to artisanal mining, the way it interacts with other sectors and stakeholders (i.e. its governance structures), and the social, economic, political**,** and environmental dimensions of ASM in KBK region. This needs relevant and authentic baseline data.

Data for profiling artisanal and small-scale mining will facilitate more effective design, implementation, and monitoring of development interventions in this region and enhance the effectiveness of development interventions to mitigate the impacts of COVID-19 on ASM communities. The baseline survey will generate more accurate understanding of the dimensions and characteristics of current situation of the ASM communities in the KBK region which will provide a critical knowledge base for strategy building, programme interventions and policy formulation. The critical social issues identified can be taken into account for future project design.

3. Review of Secondary Data:

National Mineral Policy, India 2019 has mentioned about small scale mining without any elaborate policy statement of ASM sector while studies point out the presence of 12 million workers supporting their livelihood from ASM sector in India. Artisanal / Small-Scale Mining in India constitute about 95% of the total number of mines (about 8700) and produce about 42% of the value of total output of non-fuel minerals. (Artisanal and Small-scale Mining in India, S L Chakravorty, IIED, World Business Council for Sustainable Development, 2002, October, 2001)

Earler studies report that materials mined by ASM in India are barite, bauxite, chromite, coal, copper, diamonds, gold, gemstones, granite, iron ore, limestone, manganese, marble, mica, sandstones, and slate Government priorities include the use of satellite and remote sensing technology to map and monitor main ASM areas, development of an online National Mineral Information system for investors and increase mining and quarrying contribution to GDP from 2–5%, much of which might come from ASM, but government favors large-scale and mechanized operations. (Kuntala Lahiri-Dutt and James McQuilken, *Metallic and nonmetallic deposits in India*, State of the Artisanal and Small-Scale Mining Sector, 2019, World Bank. 2019. *2019 State of the Artisanal and Small-Scale Mining Sector.* Washington, D.C.: World Bank)

The reports also mention that there are no associations and member organizations in ASM sector in India. ASM (not including quarrying of development minerals) provides livelihood to more than 1–1.5 million workers directly, 3 million workers indirectly, ASM (including quarrying) provides livelihood to 12 million workers. 80% of ASM operation in India is informal in nature. In reference to gender participation in ASM, male workers constitute 60 percent while female participation is about 40 percent.

A study by Arnab Roy Chowdhury[a,*], Kuntala Lahiri-Dutt[b] presents a political economic appraisal of the de-peasantisation of indigenous communities through an ethnographic exploration of artisanal mining and trade of coloured gemstones in the Kalahandi district of Odisha. It shows that the *Khonds*, one of the poorest indigenous groups had

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taken up mining of semi-precious gemstones since the 1990s. That period coincided with the opening of the Indian market of gemstones to the world. That allured this community to a greater extent to replace their traditional subsistence agriculture with artisanal mining. Besides, the informal mining sector was a livelihood option providing them with higher return and quick money.

Apart from the above studies, the World Bank and the United Nations, have sponsored and made use of baseline and diagnostic studies of small-scale and artisanal mining situations in at international level to provide a benchmark for monitoring progress and for assisting in the design and implementation of specific interventions. Most of the older studies were commissioned as static works undertaken by national or international consultants and were guided by terms of reference developed for the specific work (e.g. World Bank studies in Tanzania, Madagascar, Mozambique, Burkina Faso, Ghana).

4. Objectives:

With a particular focus on artisanal and small scale (ASM) mining workers/operators and related micro and small-enterprises (MSEs) from production through the value chain, the baseline research study aims:

- To build a data base for strategic and sustainable programme for artisanal mining communities in Odisha, India to cope with COVID-19 related impacts
- Increase the profile of the economic significance, scope and potential of minerals extracted by ASM communities including colored gemstones and gold and their value chains;
- Foster understanding of the technical, legal, social, occupational and environmental challenges and opportunities presented by the sector;
- Provide a foundation for evidence-based decision- and policy-making;
- Put forward concrete, practical context- and commodity-specific and gender responsive recommendations to the Government, sector stakeholders
- To suggest recommendations for future action benefitting ASM communities

5. Methodology

- The study aims for collection, analysis and interpretation of primary data from a range of sector stakeholders across all steps of value chains from mine to final market.

- Primary data collection consisted of 24 site assessments and 24 communities 12 each from 2 districts Subarnpur and Kalahandi, interviews with 387 participants and focus group discussions by engaging various stakeholders from Artisanal and Small-scale Mining (ASM) communities, as well as consultative meetings with traders, private and

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public-sector stakeholders.

- Existing secondary data has been collected and relevant literature reviewed to supplement and validate primary data. The focus minerals in the baseline include all types of colored gemstones available in Kalahandi and gold extraction in Subarnpur: These two were chosen for the value chain analysis.

5.1. Research Approach

Both quantitative and qualitative data was collected to increase reliability and robustness of data. A total of 5 tools were developed for the collection of primary data from the field. These tools included both structured and semi-structured interview guides, each developed according to the variety of contexts that would be encountered during fieldwork. All tools were field tested and refined prior to the commencement of the field research.

- Community Schedule
- Baseline (Household) survey Schedule
- Semi-structured/open ended Survey Schedule for key informant interviews
- Semi-structured/open ended Survey Schedule for Value chain and supply chain data
- Questions for Focus group discussion on value chain and supply chain

The investigators targeted a variety of stakeholders, including ASM mine site workers, traders, local government representatives, and others.

5.2. Field Research

Field research was conducted in 2 districts purposively selected where there are active mines and ASM workers are engaged at least 8 months in a year in extraction of gold and colored stones. Field research comprised of the following activities (Table 1):

- Consultative meetings and interviews with local government
- Comprehensive ASM site assessments, which comprised of individual household interviews as well as focus group discussions with ASMs and local traders
- Interviews with traders/brokers.
- Rapid enumeration of ASM sites and points of sale, to collect key information for the baseline and value chain analyses

The organization and preparation of the fieldwork for primary data collection comprised of the following activities:

- Research team training
- Logistical organization of field work, including accessing vehicles and drivers, setting up initial meetings by local facilitators with community leaders and SHGs of women
- Field testing of the tools

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- Refinement of the tools based on results of field testing
- Finalization of team composition
- Finalization of field work implementation plan, the role of local facilitator in facilitating the data collection by reaching the participant for one to one interview by following the standard operating procedure during COVID-19 (sanitization of hand, use of face mask and maintaining a distance of 3-meter and informed consent from the participant identified in purposive and snow ball sampling). The local facilitators smoothly managed the protocol

5.3. Survey Procedures

- Four data collection teams, each consisting of four trained enumerators (2 males and 2 females) and one trained team leader completed all data collection for the baseline assessment.

- Enumerators were responsible for interviewing respondents, while team leaders were responsible for supervision and spot-checking the interviews.

- The team leader explained the purpose of the assessment to community leaders, emphasizing the fact that participation was voluntary and that respondents would not receive any material benefits. Community facilitators were engaged to facilitate data collection by the enumerators.

5.4. Sampling & Sample Size

With an ASM population of above 100000 in KBK region, we decided a sample size of 387 with equal representation of male and female participants. We selected purposive sampling method on the basis of high presence of ASM workers and activity and on the basis of production areas for ASM commodities (Colored Gemstones and Gold) and adopted snowball sampling technique to reach 387 respondents in which initial interviews and discussions led to referrals to reach target female and male respondents which was facilitated by community level facilitator in advance of at least 24 hours.

The reasons for opting Purposive and snowball techniques:

- Limitation of resources and time to carry out the work in the context of COVID-19 restrictions– these were limitations to data collection in the field, and were taken into account when conducting sampling, in order to ensure that resources were used in the most efficient manner
- At each site, the research team ensured, as far as possible, coverage of the following aspects:
  - Individuals from each step of the supply chain present on site
  - Gender, targeting 1:1 gender parity

- Relative vulnerability, ensuring that those with less 'voice' were featured

5.5. Focus Group Discussion and Key informant Interviews:

- Self-selection by ASM community members is followed for focus group participation and Key informant interviews– the initial individuals consulted on site were asked to identify 8-12 relevant participants for focus group discussions to mitigate against researcher bias, as well as to promote engaged conversation by ensuring that all participants were taking part in the discussion of their own choice. Finally two groups were organized for focus group discussions involving 11 males and 12 female participants and intensive discussions were held with 12 Key informants in the sector.
- The potential risk that self-selective sampling would exclude certain participants, who lacked a strong 'voice' in their community, was minimized by supplementation with purposive sampling. Care was taken by the researchers to select additional participants who were excluded, but who the researchers felt would benefit the focus group discussion and key information about the sector.
- The two Focus Groups and the key informants consisted male and female miners representing a variety of roles in the sector.

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6. Selection of sites of survey by district and commodity:

The blocks are purposively chosen as Bhawani Patna & Junagarh blocks of Kalahandi District has rich gemstone deposit including cat's eye, sapphire, ruby, garnet, crystal, topaz, moonstone, diamond, tourmoline, acquamarine, beryle, alexandrite, etc.[1] Key informants and media reports reveal that two out of every three villagers (mostly tribal peasants and dalit castes) in these blocks are connected with the trade.[2]

Mahanadi river basin of Birmaharajapur, Ulunda & Binka blocks of Subarnapur district (part of undivided Bolangir district of KBK) have gold and gemstone deposits. Gold extraction from the river basin is done by local ASM communities (Jhara community) for about 8 months in a year except rainy season.

7. Collected Primary Data:

The baseline research collected and compiled demographic information, information on local organization and power dynamics, gemstone trade – value chain and supply chain data, local development, women's role, children's role and health information by survey of 387 respondents from ASM workers, focus group discussion of 12 groups of ASM workers, traders, land owners of mines and those in the value chain, key informant interviews referring specific research questions:

8. Demographic Information:

8.1. Gender and Age Group of Respondents:

Out of 387 respondents 50.13 percent were males and 49.87 percent were females. About 36.87 respondents belonged to the age group of 18-30 years while 38.24 percent respondents were 31-49 years age group. 18.61 percent respondents were 50-59 years age group and 6.20 percent respondents were 60 years old or above.

The 36.87 respondents belonging to the age group of 18-30 years were in the formative age of making career and families (Table-2 and Table-3).

8.2. Ethnicity and religious Practices:

67.70 percent of the respondents were indigenous tribal and 32.30 were non-tribal and migrants settled locally at the time of the survey.

About the respondents' ethnic origin, 48.58 percent belonged to Khond tribe, 19.12 belonged to Munda tribe, 30.23 were Indo-Aryan people and 2.07 belonged to South Asian ethnic groups (Muslim). In reference to religious practices of the respondents, 74.42 percent respondents were Hindus, 23.51 percent were Christians and 2.07 percent were Muslims (Table 4 and Table 5).

8.3. Marital Status

Relating to marital status of the respondents 26.36 percent respondents were single, 56.85 percent were married, 3.61 percent respondents living with partners as live-in relationship or cohabiting, 11.11 were widowed and 2.07 were divorced (Table-6).

9. Household Living Pattern

9.30 percent of the respondents were staying alone while 90.70 percent were staying with other family members. Those staying alone in their residence had the privilege of 1.5 living rooms, 36.95 percent of respondents were sharing one living room with more than one person, and 39.18 percent respondents shared one living room with four persons while 12.37 percent of the respondents shared a living room with about 3 persons (Table 7).

10. Level of education:

Relating to the level of education of the respondents 37.21 percent respondents had no formal education, 17.05 had some primary education, 13.70 percent had primary level education, 12.15 percent had some secondary level education, 10.59 per cent had secondary qualification and 9.30 had tertiary level qualifications (Table 9).

11. Children in Households:

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About the number of children in respondent households 37.98 percent households had no children of less than 18 year old. 8.79 percent households had only one child. 21.19 percent households had two children. 17.57 percent households had 3 children. 11.37 percent households had 4 children and 3.10 percent households had 5 or more children of less than 18 years old. The latter two categories with 4 or more children mostly were households of joint families.

When asked about the number of 6-12 years age group school going children, 57.11 percent respondents said that they had no school going children. 6.72 percent households reported one school going child each. 15.25 percent had 2 school going children. 11.89 percent had 3 school going children. 7.23 percent households had 4 children attending school while 1.80 percent households had 5 or more children enrolled in schools. The categories with 3 or more children attending schools were mostly households of joint families (Table 8 and Table 10).

12. Language:

Although the mother tongue of 66.93 per cent respondents was tribal language (kui), they communicated in Odia language and their children attend schools with medium of instruction in Odia language. The mother tongue of 30.23 per cent was Odia language and Hindi was the mother tongue of 2.84 per cent respondents.

In connection to language proficiency 62.79 percent respondents were able to read and write Odia and 25.06 were able to read and write English language. 24.55 percent were able to read and write Hindi. (Table 11 and Table 12)

13. Access to housing & other Basic Facilities

- Regarding access to housing, 51.42 percent households had Pucca houses of one or two rooms each which they had availed through government schemes in the last 5 years based on socio-economic criteria of below poverty line (BPL) and 48.58 percent had Kutcha houses.
- About access to basic facilities, 76.49 per cent had electricity connection in their households and only 26.36 per cent had access to safe potable water closer to their premises. 73.64 percent respondent households had no access to safe potable water. They avail water from streams and ponds away from residential premises which remain polluted most of the time in a year.
- Regarding toilet type, 2.84 percent had flush latrine with water connection. 63.05 had flush latrine without water connection and they hardly ever used their facility. 34.11 percent households had no toilet facility and they use open space.

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- 57.62 percent miner households had own mobile phone. 5.94 percent had both land line and mobile phone. 36.44 percent of households had neither landline nor mobile phone (Table 13, Table 14 and Table 15).

14. Household Assets:

- Relating to land ownership by household, 2.84 per cent of households were landless. 23.78 per cent were having less than 1 hectare of land. 53.23 percent had 1-2 hectares, 14.21 percent households had 3-4 hectares and 5.94 percent households had 5 and above hectares of land.
- Relating to livestock (number by type) cow or large animal, 3.36 per cent households had no cow or other large animals. 27.91 percent households had 1-2 animals. 44.18 percent households had 3-4 cows or large animals. 24.55 percent households were keepers of 5 and above large animals.
- Relating to possession of small livestock 47.55 percent households had 11-20 poultry birds. 31.52 per cent had 6-10 poultry birds, 14 percent households had no poultry birds..
- Households having small animal like goat & sheep 12.40 percent households had no small animals like goat or sheep. 26.36 percent had 1-5 goats and sheep. 40.83 percent had 6-10 small animals, 17.31 percent had 11-20 such animals while 3.10 percent had 21 and above small animals.
- About possession of household durables 17.57 percent households had radio sets, 24.81 percent had televisions, 5.94 percent households had refrigerators, 1.55 percent had cars and 37.21 percent had two wheelers including bicycle, moped and motor bikes.
- When asked about the amount of grains in storage in quintals in their households 37.47 percent households had less than 1 quintal grains in their storage, 42.12 percent households had 2-5 quintals, 8.79 percent had 6-10 quintal grains in stock, 6.46 percent had 11-15 quintals of grains, 2.84 percent households had 16-20 quintal grains and 2.32 percent had above 20 quintals of grains in their storage. (Table 17 to Table 22)

15. ASM and the Miners:

15.1. Commodities Mined:

Regarding the commodities mined by the ASM miners 48.32 percent of the respondents were mining gold while 51.68 percent reported mining colored gemstones informally by digging lands and they were engaged by middlemen, traders and powerful people(Table 23).

15.2. Occupations:

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Regarding their occupations, 18.86 percent respondents were full time miners, 45.99 percent were pursuing both farming and mining, and 8.79 percent were pursing farming, mining and small business activities (Table 24).

16. Household Income:

When asked about their approximate household income per month in normal time prior to COVID-19 pandemic, 20.15 percent households had income less than US$ 41.67 per month, 21.19 per cent had monthly income US$ 41.68 – US$ 83.33, 19.90 percent households had income of US$ 83.34 - US$ 125 income per month, 15.24 percent households had income of US$ 125.01 - US$ 166.67 per month, 9.82 per cent households had income of US$ 166.68 – US$ 208.33 per month, 10.08 per cent households had income US$ 208.34 - US$ 416.67 per month and 3.62 percent households had monthly income above US$ 416.67 (Table 25.1).

Majority of the ASM households were marginalized and had a subsistence living.

17. Comparison of average household Income from different sources calculated prior to COVID-19 and during COVID-19 Lockdown Period

Data from Table 25.2 showed that there was a drastic fall in the income of respondent households during the period of lockdown which continued for about 7 months. There was a 67.53 percent fall in income from different activities pursued by the miner households. During the lockdown period the number of people engaged in hunting of game animals and collection of Non-timber Forest Produce (NTFP) increased drastically. This resulted due their need to supplement their livelihood when supervision in forest areas was reduced during the lockdown period (Table 25.2).

18. Comparison of average value of household expenditures prior to COVID-19 and during Lockdown Period

Data from Table 25.3 showed that there was a drastic fall in expenditure pattern which was about 66.69 percent. As the fall of income was 67.53 percent, miner households had little money at hand to spend. These households were more or less subsistence in nature and faced severe food stress.

19. Nature of Work in ASM:

- Regarding the nature of work of the ASM miners, 85.53 percent respondents were diggers and 14.47 were engaged as washers and further processing of minerals (Table 26).

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- Regarding the number of ASM miners having a valid mining license the respondents shared that they were involved in mining informally. None had a valid mining license (Table 27).
- Relating to the mining method adopted by the ASM miners 87.34 percent respondents used open pit mining method, 11.11 adopted underground mining and 1.55 percent used explosives in mining the minerals (Table 28).
- When asked about the number of years spent in mining by the ASM miners, 11.11 percent ASM miners had been doing mining for 1-3 years, 14.47 percent were involved in mining for 4-7 years, 32.04 percent were doing mining for 8-10 years and 42.38 percent were doing mining for 10 or more years (Table 30).
- Relating to distance of the mine from the homes of the ASM miners, 3.36 percent miners were travelling less than 1 Kms for mining as they were closer to mining sites, 54.78 percent were travelling 1-3 kms to reach the mining site. 22.48 percent were travelling 4-7 kms to reach mining sites, 19.38 percent were travelling 8 or more kms to do mining (Table 31).
- As mining of gemstone is illegal in KBK, 13.95 percent of respondents shared that they were arrested for mining sometime or other by law enforcement agencies (Table 43).
- Regarding being forced to pay a bribe at a mine/for being linked to mining 32.04 percent miners shared that sometime or other they were forced to pay a bribe at a mine for being linked to illegal mining to escape from being arrested (Table 44).

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19.1. Equipments Used:

When asked about the type of equipment they used for mining 87.60 percent respondents reported that they use mining equipments like hand tools which includes shovel, pick etc. 1.81 percent use mechanized equipments like excavator, pumps and other hand tools for mining and 11.37 percent used pumps and other hand tools in mining operation (Table 29).

19.2. Community Organization:

When asked about the number of household members was part of community organization 39.79 percent respondent mostly female miners said they were members of Self Help Groups (SHGs). Miners had no independent association to raise their issues (Table 33).

20. Miners' Access to Various Capital Assets:

- 82.17 percent households had bank accounts and 17.83 percent had no accounts in banks (Table 32.1).

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- Regarding access of ASM miners to productive capital assets for mining the respondents shared that they had access to manual equipments. 12.40 percent had access to technology and 1.03 percent had access to finance (mostly non-institutional/informal) (Table 34).
- Relating to the access of ASM miners to social capital assets, 39.97 percent ASM miners were organized as Self Help Groups who were females. 5.94 percent were associated with informal networks and association of miners and 54.26 percent ASM miners had no access to any social capital assets (Table 35).
- Regarding the access of ASM miners to financial capital assets for mining, 39.79 percent of ASM miners said they had access to financial capital assets from SHGs and all of them were female miners. 54.78 percent used their own savings in cash for mining and 86.64 percent use their savings from livestock and harvest sales proceedings in mining activities (Table 36).
- Regarding financial support for mining 50.39 percent miners shared that they had received financial support from traders, brokers and land owners for mining. The amount varied from INR 500 to INR 1000 per week which was later adjusted when they were paid for their work (Table 45)

21. Socio-Economic Exclusion

- Regarding the reasons of feeling of exclusion of ASM miners from accessing assets, male miners said they had no direct access to credit from SHGs mostly run by females of the community but they avail cash through the female members of their households. The Jhara community engaged in gold extraction has no social identity as a caste/tribe and they are not recognized as an occupational or social group by government according to their main occupation (Table 37).

- Regarding the capacity and ability issues that constrain the access of ASM miners to assets, 74.42 percent miners said they lacked the technical and managerial skills to access to assets needed for participation in ASM value chain or availing alternative livelihood opportunity. 81.14 percent had no access to financial support, 77.52 percent had no technical and financial capacity for acquisition of new technology, 80.62 percent had no access to information on the scope of mining sector, particularly about the value chain, gender status was a major constraint for 60.21 percent miners to access to assets particularly for the female miners as shared by 92.23 percent of the female respondents and ascribed status like caste and tribe back ground of 80.89 percent were major constraints of the ASM miners to productive assets for mining, business and undertaking alternative livelihood activity (Table 38).

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22. Market Access:

Regarding selling of products by the ASM miners 85.53 percent miners were selling to unlicensed buyers while 14.47 percent were selling their products to other brokers. None was selling to any licensed buyers.

The ASM communities had been facing multiple constraints in directly accessing markets to sell their products as shared by majority of the respondents particularly the female miners. 68.48 percent said that their trade is considered by the authority as illegal, 45.48 said that they received very poor price from selling their products, 38.24 percent faced the constraint of fluctuating prices of minerals particularly gemstones, 92.43 percent of the female miners considered their gender as a constraint to negotiate with the market while selling their products. 65.89 percent faced the constraint of accessing to market information from formal channel about their products and their value chain and 47.03 percent said that too much dependence on brokers was their major constraint in accessing market for right price (Table 39).

23. Access to Information:

Information was a critical need of ASM miners in accessing productive assets. Relating to the types of information the ASM miners need in accessing assets, 63.31 percent respondents shared information about mineral deposits, 63.53 percent said information about markets and 82.95 percent said information on laws and regulations about ASM products they dealt with for years and generations (Table 40).

24. Payment Methods to Miners:

Relating to the time of payment to ASM miners shared that none is paid daily. 50.39 percent are paid weekly, 33.59 percent are paid monthly, 4.91 percent are paid in terms of concentrates and 11.11 percent are paid in the form of ores.(Table 41).

25. Spending of Mine Earnings

Regarding the spending of mine earnings 10.16 percent of their income from mining was spent at onsite to buy food, alcohol etc. Male miners spent 15 percent of their income onsite while female miners spent only 5.29 percent of their earning. While male miners spent 43.50 percent of their income for buying groceries and food and household amenities, the female miners spent 49 percent of their earning for buying groceries and food and household amenities.

Female miners invariable spent more on health care (3.14 percent of their income), repay of debt (3.98 percent of their income), purchasing clothes (4.0 percent of their income), spending in marriages, religious ceremonies and funerals (6.24 percent of their income), investing in business

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(7.0 percent of their income), paying school fee and education of children (7.33 percent of their income) than the male miners.

The male miners spent more on investing in housing and house repair/renovation (7.96 percent of their income), buying agricultural assets, land, buying agri-inputs: seeds, fertilizers or hire laborers (10.00 percent of their income) which were higher than the spending by female miners. While male miners saved 2 percent of their income, the female miners' saving was 3.48 percent of their income (Table 42).

26. Participation in Power and Decision Making

- Mining operation in gemstone and gold extraction in ASM sector in Odisha, India is considered informal and illegal. When asked about participation in decision making at the mining operation, 59.95 percent ASM workers reported that they decide themselves about their access to mineral deposit. 67.44 percent said that they decide about production, 55.81 shared that they decide the selling of their product, 55,29 percent said that they decide the sourcing of inputs and 32.56 percent said they take decision on waste disposal (Table 46).
- Regarding the constraints the ASM workers face in decision making in mining operation 40.05 percent miners said that they faced the constraint of exclusion in decision making in mining operation. While 33 percent of the male miner faced exclusion, 47.15 percent faced exclusion as a constraint in decision making at the mining operation (Table 47)
- 41.86 percent shared that their views in decision making is disrespected by others and seldom accepted. While 33 percent of the male miners faced disrespect, disproportionately higher percentage of female miners (50.78) percent faced disrespect of their views and participation in decision making at the mining operation.
- 38.24 percent reported that they faced opposition often resulting in conflict and violence whenever they expressed their views in decision making at the mining operation. While 31.96 percent male miners encountered opposition, a disproportionately higher percentage of female miners (44.56) faced opposition often resulting in conflict and violence. (Table 47)
- Regarding participation in decision making in local government level, 44.84 percent male miners said that they participated in consultation in review and development at the local government (Panchayat) level while female participation was disproportionately low in local government periodic activity review and development consultations which were held through Gramsabha meetings. Unfortunately about 67.36 percent female miners never participated in decision making in local government level due to several constraints they encounter like males take the lead, gender status, exclusion etc as expressed by them (Table 48).

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- Regarding the constraints the miners face in decision making at the Panchayat level (local government) decision making process, 13.95 percent said that they are never allowed to participate even when present in Gramsbha meetings. 5.67 percent of the males and a disproportionately higher number of female miners (22.28 percent) faced exclusion in decision making at the local government level.
- 70.28 percent said that they were never allowed in consultation in Gramsabha meetings as government officials present in the meetings never allowed them to present their views and needs. While 69.07 percent males faced this, a slightly more number of female miners about 71.50 percent faced the disadvantage of no-consultation in meetings.
- 15.77 miners said that they want to present their community problems but others dominate and during consultation process, they never get full opportunity to express their views. While 25.26 males faced the problem of inadequate consultation as they take initiative and lead, only 6.22 percent females faced situations of inadequate consultation as they take less initiative and lead in the presence of male members of the communities and the government officials. (Table 49)
- The ASM workers shared that they had no platform or opportunity or channel to participate in decision making in the national government level neither in consultation in review and development nor in consultation in policy, by-laws, regulations, programs for ASM sector (Table 50).
- Regarding at the national government level, the gemstone and gold ASM workers and informal associations expressed that they had no decision making role as their mining operation was informal in nature and considered illegal (Table 51).

27. Miners' Needs, Priorities, and Perspectives on Service Delivery

Regarding miners' practical gender needs, 57.11 expressed their need for training to improve their skills, 54.78 percent expressed their desire to improve their income from ASM by further value addition and participating in ASM value chain, 77.52 percent talked about the need of equipment and technology for mining operation, 58.66 percent miners mentioned about the need of health and safety information and services to optimize benefits from ASM. 68.48 percent emphasized on alternative livelihood opportunities as practical gender needs.(Table 52)

27.1. Formalization of ASM

When asked about improvement in men's and women's access to mineral deposits and services (production and marketing). 86.30 suggested for formalization of ASM sector particularly gemstone and gold sectors in India, 74.16 percent wanted formal access to mineral deposit and extraction by ASM communities, 83.98 percent respondents said about right to sell mineral products through formal channel, 94.57 percent cited the need of information on mineral deposits and services (production and

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marketing) to be improved and 81.14 percent expressed about access to finance from institutional agencies like banks and micro-credit institutions. In this context, majority of the respondents pleaded for initiatives for formalization of the ASM sector in India (Table 53).

27.2. Women Miners' Association

When asked about women miners' association, the respondents said that there was no woman miners' association in gemstone and gold sectors in KBK region in particular and in India in general (Table 54).

When asked whether women's Miner's Association, if formed, would facilitate their needs being met, 47.55 percent said yes and majority of them about 92.23 percent were from female respondents while males did not so interest (only 3.09 percent) about formation of a separate ASM women's association (Table 55).

27.3. Response about Structural Changes in ASM Sector

- ASM miners' response regarding changes to be made in the structures (social, cultural, economic, institutional, and legal) that affect ASM to improve the livelihood outcomes of women and men, 68.22 percent expressed changes in the attitude of government departments and agencies, 58.66 percent said it was law enforcement agencies and judiciary which needs transformation, 39.95 percent spoke about traditional authorities in communities, 36.69 percent wanted approach and functioning of civil society and organizations needs to be transformed to improve the livelihood outcomes of women and men in ASM sector. 47.03 percent said formation and strengthening of ASM miners' association and 81.14 percent said financial institutions should have a pro-ASM sector approach to support the miners (Table 56).

- Regarding their understanding of the laws that affect rights to access mineral deposits 47.80 percent miners said that they understand the laws that affect rights to access mineral deposits. They said that law does not approve their activities while a majority of 52.20 had no awareness about the laws that affect rights to access mineral deposits (Table 57).
- Regarding the interest of the miners for changes in the laws to improve the access of male and female miners in ASM to mineral deposits, 93.53 percent of miners expressed their desire for the laws to be changed to improve the access of men and women in ASM to mineral deposits. Only 6.46 percent said otherwise (Table 58).
- The respondent miners expressed their inability to comply with the mining law. When asked about their comfort level in dealing with law enforcement agents and courts, 96.90 percent miners said that they are uncomfortable about dealing with law enforcement agents and courts (Table 60 and Table-61).

28. The Reasons for people engaged in ASM

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Regarding the reasons for people engaged in ASM, the miners cited different reasons for their engagement in ASM. 46 percent cited the reason of local population growth and economic need, 51.16 percent cited the reasons of diminished soil fertility or agricultural productivity, decreased cash-crop profitability, inadequate access to farming inputs, market failures, natural disasters and climate extremes, 45.22 percent cited the reason of the loss of agriculture input subsidies (e.g., fertilizers), and changing rainfall patterns, 49.61 percent were engaged to get supplementary income source and as a means of survival as most of them were impoverished farmers. 83.72 percent said their engagement is due to the availability of gemstone in local area & high value of the gem stone/gold as important source of livelihood and their inability to find other work. 48.32 percent were engaged to fulfill their aspiration of becoming rich, 74.16 percent were engaged as they had no alternative livelihood opportunity at hand, 22.74 percent said they engaged them in mining as the brokers paid them advance money to work, 60.21 percent were engaged as it was their traditional family occupation and their cultural and social attachments to this lifestyle and its acceptance by their community, 63.05 said that ASM was an income source for them to purchase necessities of daily life and maintaining or improving their standard of living (Table: 62).

29. Changes in miners' and their families' lives:

Regarding the ways ASM has changed miners' and their families' lives 45.48 percent said that it has put them in "poverty trap" of low productivity and indebtedness, 29.46 regretted that ASM is responsible for increased participation of child labour and reduced attendance in schools.
48.32 percent respondents said that by engagement in ASM female miners directly produce income for themselves or their families, 22.22 percent said that for female miners ASM work was a means of raising capital to start businesses that would allow them to quit mining one day. 34.11 percent said that ASM provides them employment during dry season, 39.79 percent said that income from ASM supports fund for education of their children. 31.55 percent said that the income from ASM supports fund for health care needs, 11,11 percent said that the income supports fund for housing and 35.92 percent shared that they used the income from ASM to meet family food security (Table 63).

30. ASM income and Education

Regarding the relation of ASM income to education 39.79 percent miners said that income from ASM helped in sending their children to school. 29.46 percent miners shared that children dropout from school as they are diverted to mining activities and engaged as child labour. 29.46 percent also shared that children participation in ASM led to school attendance becoming less as children become irregular. 60.21 percent miners said if skill training and second chance education is introduced that would help many adult miners (Table 64).

31. Health Care and Hazards in ASM Sector in KBK:

When asked about the healthcare services they had accessed in the last 1 year prior to COVID-19, district hospital was accessed by 19.12 percent respondents, 27.91 percent accessed to

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Community Health Centre –CHC for treatment, 28.68 percent were accessed to Primary Health Centre –PHC, 26.87 percent were accessed to community level sub-centres and about 1.87 percent were accessed Private Health Clinics (private Health care providers) (Table 67).

31.1. Female Miners:

- Regarding health hazards face by female miners in ASM sector 26.94 percent had high COVID-19 vulnerability due to incidences of coronary artery disease and high blood pressure (hypertension) and diabetic conditions. Majority of the ASM miners were vulnerable to COVID-19 as they were working in groups/staying in communities where there was little scope to maintain social distance. 9.33 percent were reported COVID-19 positive prior to the survey.

- 9.84 percent female miners mostly from ASM gold sector were exposed to chemical hazards like mercury inhalation, 7.25 percent female miners were suffering from neurological, kidney and autoimmune impairment, 8.29 percent were showing symptoms of neuropsychiatric symptoms such as fatigue, insomnia, anorexia, shyness, withdrawal, depression, nervousness, irritability and memory problems, 19.69 percent were suffering from waterborne and vector-borne diseases, 2.07 percent were suffering from some or other sexually transmitted infections or HIV/AIDs, 6.22 percent were suffering from musculo-skeletal disorder - chronic injury and fatigue from carrying heavy materials over long distances, and bending over in awkward positions, 7.25 percent female miners were under drug and alcohol abuse, 16,58 percent had faced violence either at the family or at the mining sites, 19.70 percent female miners were found having nutritional deficit disorder, 6.74 were suffering from respiratory diseases such as silicosis, chronic bronchitis or tuberculosis, 4.15 percent ASM gold female miners who were pregnant were exposed to mercury (Table 65).

31.2. Male Miners:

- Regarding the response on health threats in ASM communities from male miners 38.14 percent had high COVID-19 vulnerability due to incidences of coronary artery disease and high blood pressure (hypertension) and diabetic conditions. Majority of the ASM miners were vulnerable to COVID-19 as they were working in groups/staying in communities where there was little scope to maintain social distance and there was little awareness about preventive measures in the initial stage of infection. 11.86 male miners were tested positive.
- 17.01 percent male miners mostly from ASM gold sector were exposed to chemical hazards like mercury inhalation, 11.86 male miners were suffering from neurological, kidney and autoimmune impairment. 7.22 percent male miners were showing symptoms of neuropsychiatric symptoms such as fatigue, insomnia, anorexia, shyness, withdrawal, depression, nervousness, irritability and memory problems, 17.01 male miners were suffering from waterborne and vector-borne diseases, 9.28 percent male miners were

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suffering from some or other sexually transmitted infections or HIV/AIDs, 7.73 percent male miners were suffering from musculo-skeletal disorder - chronic injury and fatigue from carrying heavy materials over long distances, and bending over in awkward positions, 28.87 male miners were under drug and alcohol abuse, 5.67 percent male miners were victims of violence either at the family or at the mining sites, 27.84 percent male miners were found having nutritional deficit disorder, 21.13 percent male miners were suffering from respiratory diseases such as silicosis, chronic bronchitis or tuberculosis (Table 66).

32. Needs of Female miners in ASM

- Regarding the needs of Female miners in ASM 55.44 percent female miners said they need policies for legalizing and regularizing ASM. 79.80 percent talked about the need of alternative livelihood opportunities for female artisanal miners, 33.16 percent wanted creation of female-focused services like child care centres. 58.03 percent female miners suggested for skill training & second chance education programme to upgrade their skill and educational level. 92.23 percent female miners emphasized on mechanism for prevention of gender discrimination at excavation and mine sites. 91.19 percent suggested for insurance and 61.14 percent showed interest for organizing female miners' cooperative or association (Table: 68).

- In the context of the extent of access of female miners to valuable assets in ASM, 4.15 percent female miners had very low level ownership or rights over resources, 1.04 percent had medium level involvement and 2.04 percent had low level participation in decision making or consultation about mining plans including finding new sites or returning to old ones. 68.39 percent female miners considered ASM was a medium level paying activity for them while 31.61 percent said it was a low level paying activity. 20.73 percent female miners shared that they had medium level access to materials like high grade rocks/ores while 79.27 percent said they had low level access to high grade rocks/ores (Table 69).

- Regarding the opportunities for female in ASM sector, it was found that about 16.58 percent of female miners had diversified into other economic activities. 34.72 percent had earnings from ASM that had increased their social status. In case of 66.32 percent cases mining income helped them support their households. In 4.15 percent cases females had broken gender barriers to open new pathways for others. In 2.59 percent cases females were renting processing machines, and a few were gaining stature as "big persons" in the mining zone. In 1.04 percent cases females were playing key decision making roles in ASM sector (which were mostly informal in nature). 4.15 percent females were able to exercise informal ownership or rights over resources (Table 70).

- When asked about interventions needed for empowerment of females in ASM sector 58.03 percent females suggested second chance education/ skill training/ vocational

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training for the aspiring female artisans, 79.80 percent focused on provision of alternative livelihood opportunities, 57.51 percent emphasized on introduction of labour saving equipment and technology as a critical step to enhance females' effectiveness in ASM sector, 35.75 percent said authorities and local ASM leaders to encourage and create space and platform for participation of female miners in policy and decision making. 45.60 percent female miners emphasized on the need of organizing female cooperatives to get institutional support and services, 44.56 percent female miners mentioned the need of leadership development training, 66.84 percent stated the allotment of land, license and provision of legal protection, 58.03 percent asked for access to finance and 92.75 percent focused on the need of information about the sector (Table 71).

33. Children in ASM

- Regarding children's involvement in ASM 63.05 of the adult respondents said that the reason for children's involvement in ASM is their presence in mine sites, 61.50 percent revealed that children are invited by relatives to provide supplementary services like water, transport, carry food, etc, 63.05 percent miners admitted that children did participate in mining activities, 24.03 admitted it as forced labour and about 32.82 percent stated that minerals or money is extorted from mine workers and child labours by armed groups (Table 72).
- When asked about the reasons of involvement of children in ASM, 59.95 percent miners stated that as parents and other family members were involved, so children automatically joined them, 39.79 percent miners shared that as children were not enrolled in schools, they participated in mining for extra income. 55.81 percent miners said that children manage to get some remuneration when participated in mining. 58.14 percent mentioned that as peer groups were involved in mining, the other children voluntarily came forward. 41.60 percent miners shared that children working in ASM provided the families with alternative and additional livelihood opportunities for families and also to address intergenerational mining involvement (Table 73).
- Regarding the activities performed by children in ASM. 34.63 percent adult miners said that children in ASM mostly performed activities like panning, 35.66 percent said children were involved in ore shifting, 28.94 percent said the involvement of children in amalgamation, 44.44 percent said children's involvement in surface mining and 46 percent said about children supplying food and water in mining sites (Table 74).
- Regarding the health hazards children in mining were exposed in ASM, 10.53 percent cases included chemical hazard –mercury inhalation, 7.02 percent cases were symptoms of neuropsychiatric symptoms such as fatigue, insomnia, anorexia, shyness, withdrawal, depression, nervousness, irritability and memory problems, 9.65 percent cases where children were suffering from waterborne and vector-borne diseases. In 12.28 percent

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cases children were under the influence of drug and alcohol abuse. In 34.96 percent cases children had faced violence in mining sites. In 19.30 percent cases children were suffering from nutritional deficiency and in 6.14 percent cases children had respiratory diseases such as silicosis, chronic bronchitis or tuberculosis (Table 75).

- Regarding access of children in schools, 85.96 percent were enrolled but 58.77 percent of them were not attending schools. 27.19 percent were casually attending schools and 14.03 had dropped out (Table 76).

34. Recommendations:

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- Increasing focus on alternative livelihood opportunities to address the impact of COVID-19 and for sustainable livelihood of ASM people
- SHGs and ASM groups to be encouraged for implementing micro-projects on health, online education for child labors in mining, income generation activities to address the impact of COVID-19
- There needs to be an improvement in ASMs' occupational health and safety knowledge, attitude and practices in the context of the spread of COVID-19.
- Keeping in mind the spread of new waves of COVID-19, regular occupational health and safety awareness-raising and educational activities and required professional services should be organized on a regular basis.
- Actions should be taken for providing ASMs with social insurance and basic services to mitigate the impact of COVID-19.
- The employment roles and responsibilities of ASM stakeholders in the informal sector of labor market should be defined to plan employment security in the context of COVID-19 and policy makers and related organizations should be provided with this information and reports to mitigate the impact of loss of their employment during the pandemic period.
- ASMs' annual activity information and reporting should be generated on a regular basis by local administration and local government institutions.
- The positive impacts of the sub-sectors at the local, provincial and national levels should be clearly demonstrated in order to gain wider support to mitigate the impact of COVID-19 on ASM workers.
- Local gold and gemstone marketing procedures should be adequately regulated during pandemic times within a better legal framework and requirements.
- A study on provision of mining land to ASMs needs to be undertaken and the findings to be shared with relevant stakeholders
- Areas rich in mineral deposits should be given to local government institutions (Panchayats) under the provisions of the Panchayats (Extension to Scheduled Areas) ***Act***, category; and mining license provision authority could be delegated to the local government (village panchayats).
- Supporting ASM NGO's activities in working for the protection of ASMs' rights and interests and providing resources for alternative livelihood opportunities, relevant capacity building trainings for their income sustainability.
- To maximize long-term sustainable development of the miners, it is recommended to promote diversification of livelihood opportunities through alternative livelihood activities backed by ICT inputs and business skills.

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- Information and communication technology use needs special focus as the COVID-19 pandemic has made it clear that communications technology has to be well developed among ASM stakeholders. Therefore, investment in ICT training for small holder ASM producers will enhance their coping capacity in pandemic situation: benefit in term of accessing to information for awareness building, prior preparedness, managing online supply chain, communicating health care providers and suppliers of essential health care, hygiene, household necessities and seeking legal help as a protection against GBV.
- International best practices, lessons learnt and networking should be carefully examined and replicated into existing mining practices in KBK region.
- ASM stakeholders need to be actively engaged in formalization process and planning to ensure that solutions are workable in practice and do not lead to resistance or conflict.
- In the specific context of COVID-19, stronger emphasis needs to be given on education of children in mining along with community mobilization and strengthening of online education opportunity, incentive to parents to bring the children from mining back to school and education on a regular basis.
- Emphasis should be given on demonstrated and evidential pilot models of micro-projects on sustainable livelihood opportunity for people in ASM, if we are serious to mitigate the impact of COVID-19 in ASM communities of KBK districts.

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Annexure-1

Table 1 Breakdown of the distribution of sites by district and commodity.

Districts	Blocks	Commodity
Kalahandi	Bhawani Patna & Junagarh	Colored Stones
Subarnpur	Birmaharajapur, Ulunda & Binka	Colored Stones and Gold

Demographic Information:

Table-2: Gender of respondents

Gender	Count N=387	Per cent
Male	194	50.13
Female	193	49.87
Total	387	100

Table-3: Age of respondents

Age	Male N=194	Female N=193	Total N=387	Per cent
18-30	67 (34.54)	76 (39.38)	143	36.95

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31-49	83 (42.78)	65 (33.68)	148	38.24
50-59	34 (17.52)	38 (19.69)	72	18.61
≥60	10 (5.15)	14 (7.25)	24	06.20

Table 4: Indigenous or not

Indigenous or not	Count N=387	Percent
Yes	262	67.70
No	125	32.30

Table 5: Ethnic Group

Ethnic Group	Count N=387	Percent	Male –N=194	Female-N=193
Indo-Aryan people	117	30.23	57 (29.38)	60 (31.09)
South Asian ethnic groups (Muslim)	08	2.07	04 (2.06)	04 (2.07)
Dravidian (Khond	188	48.58	97 (50.00)	91 (47.15)
Austroasiatic (Munda)	74	19.12	36 (18.56)	38 (19.69)

Table 8: Religion

Religion	Count N=387	Percent	Male – N=194	Female-N=193
Hindu	288	74.42	146 (75.26)	142 (73.58)
Muslim	08	2.07	04 (2.06)	04 (2.07)
Christian	91	23.51	44 (22.68)	47 (24.35)

74.42 percent respondents were Hindus, 23.51 percent were Christians and 2.07 percent were Muslims.

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Table-6: Marital Status

Marital status	Count N=387	Percent	Male –N=194	Female-N=193
Single	102	26.36	58 (29.90)	44 (22.80)
Married	220	56.85	114 (58.76)	106 (54.92)
Living with partner/cohabiting	14	3.61	4 (2.06)	10 (5.18)
Widowed	43	11.11	17 (8.76)	26 (1.35)
Divorced	08	2.07	01 (0.52)	07 (3.63)
Total	387	100	194	193

Table 7: Household Size and Number of people live with you (do not count yourself) and living rooms in HH N=387

No of people Live with you	Average number of Rooms in HH	Rooms per person in HH	Count – N-387	Percent	Male – N=194	Female-N=193
Self (0)	1.5	1.5	036	9.30	21 (10.82)	15 (7.77)
1-3	1.5	0.6	143	36.95	73 (37.63)	70 (36.27)
4-6	1.25	0.25	150	38.76	76 (39.18)	74 (38.34)
7 and above	3.0	0.38	058	14.99	24 (12.37)	34 (17.62)

Table 8: Number of children

Number of children (Less than 18 year old)	No of HH N=387	Percent	Male N=194	Female N=193
None	147	37.98	81 (41.75)	66 (34.20)
1	034	08.79	16 (8.25)	18 (9.33)
2	082	21.19	39	43

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			(20.10)	(22.28)
3	068	17.57	31 (15.98)	37 (19.17)
4	044	11.37	20 (10.31)	24 (12.44)
5 or more	012	3.10	07 (3.61)	05 (2.59)

Education:

Table 9: Level of education:

Level of education	Count N=387	Percent	Male – N=194	Female- N=193
None	144	37.21	69 (35.57)	75 (38.86)
Some Primary	66	17.05	34 (17.53)	32 (16.58)
Primary	53	13.70	26 (13.40)	27 (13.99)
Some secondary	47	12.15	25 (12.89)	22 (11.40)
Secondary	41	10.59	21 (10.82)	20 (10.36)
Tertiary	36	09.30	19 (9.79)	17 (8.81)

Table 10: Number of school going children (6-12) not attending school

Number of School going children	No of HH	Percent	Male N=194	Female N=193
None	221	57.11	109 (56.19)	112 (6.22)
1	26	6.72	12 (6.19)	014 (7.25)
2	59	15.25	31 (15.98)	028 (14.51)
3	46	11.89	22 (11.34)	024 (12.44)
4	28	07.23	17 (8.76)	011 (5.70)

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5 or more	07	01.80	03 (1.54)	004 (2.07)

Table 11: Mother tongue

Language	Count	Per cent
Tribal	259	66.93
Odia	117	30.23
Hindi	011	02.84

Table 12: Language Proficiency – multiple

Language Proficiency	Count	Per cent	Male N=194	Female N=193
Can read Odia	243	62.79	124 (63.92)	119 (61.66)
Can read and write Odia	243	62.79	124 (63.92)	119 (61.66)
Can read English	121	31.27	66 (34.02)	55 (28.50)
Can read and write English	097	25.06	56 (28.87)	41 (21.24)
Can read Hindi	118	30.49	56 (28.87)	62 (32.14)
Can read and write Hindi	095	24.55	46 (23.71)	49 (25.39)

Access to housing & other Basic Facilities

Table 13: Housing

Housing	Count N=387	Percent	Male N=194	Female N=193
Pucca	199	51.42	102 (52.58)	97 (50.26)
Kutcha	188	48.58	92 (47.42)	96 (49.74)

Table 14: Access to basic facility N=387

Basic Facility Access	Yes	%	No	%
Electricity	296	76.49	91	23.51

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Safe potable Water	102	26.36	285	73.64

Table 15: Toilet Type

Toilet Type	Count N=387	Percent	Male N=194	Female N=193
None –open space	132	34.11	54 (27.84)	78 (40.41)
Flush latrine with water connection	011	02.84	03 (1.55)	08 (4.15)
Flush latrine without water connection	244	63.05	137 (70.62)	107 (55.44)
Total	387	100	194	193

Table 16. Household has telephone

Telephone	Count N=387	Percent
None	141	36.44
Land line & Mobile	023	5.94
Mobile	223	57.62

Household Assets:

Table 17: Land Ownership by household

Land own in Hectare	Count N=387	Per cent	Male N=194	Female N=193
Nil - landless	11	2.84	04 (2.06)	07 (3.63)
Less than 1 Hectare	92	23.78	38 (19.59)	54 (27.98)
1-2 Hectares	206	53.23	110 (56.70)	96 (49.74)
3-4 Hectares	055	14.21	029 (14.95)	26 (13.47)
5 and above Hectares	023	05.94	013 (6.70)	10 (5.18)

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Table-18. Livestock (number by type) cow or large animal

Livestock –large animal	Count N=387	Per cent
Nil	13	3.36
1-2	108	27.91
3-4	171	44.18
5 and above	95	24.55

Table 19: Small livestock -poultry

Livestock –small animal	Count	Per cent
0	14	3.62
1-5	43	11.11
6-10	122	31.52
11-20	184	47.55
21 and above	024	06.20

Table 20: Small Animal –goat & sheep

Livestock –small animal	Count N=387	Per cent
0	48	12.40
1-5	102	26.36
6-10	158	40.83
11-20	067	17.31
21 and above	012	03.10

Table 21: Household Assets –multi-choice

House hold assets	No of HH having	Percent
Radio	68	17.57
Television	96	24.81
Refrigerator	23	05.94
Car	06	01.55
Two-wheeler (Bicycle, Moped,	144	37.21

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motor bike)		

Table 22: Bags of grains in storage in quintals

Bags in quintals	No of HH having	Percent
Less than 1	145	37.47
2-5	163	42.12
6-10	34	08.79
11-15	25	06.46
16-20	11	02.84
Above 20	09	2.32

Table23. The commodities mined by the ASM miners N=387

Name of Commodity	Count N=387	Percent	Males N=194	Females N=193
Gold	187	48.32	066 (34.02)	121 (62.69)
Colored gem stone	200	51.68	128 (65.99)	072 (37.31)

Livelihood and Economic Situation

Table 24: Occupations

Occupations	Count N=387	Percent	Male –N=194	Female-N=193
Miner	073	18.86	43 (22.16)	30 (15.54)
Farmer-Miner	178	45.99	96 (49.48)	82 (42.49)
Miner – Business	034	8.79	03 (1.55)	31 (16.06)
Farmer-Miner-Business	102	26.36	52 (26.80)	50 (25.91)

Table 25.1: Income per month (Household) in normal time prior to COVID-19 pandemic

Income per month in INR and US$	Nos N=387	Per cent	Male N=194	Female-N=193

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3000 or less US$ 41.67 or less	78	20.15	36 (18.56)	42 (21.76)
3001-6000 US$ 41.68 – 83.33	82	21.19	28 (14.43)	54 (27.98)
6001-9000 US$ 83.34 -125	77	19.90	45 (23.20)	32 (16.58)
9,001-12,000 US$ 125.01 -166.67	59	15.24	32 (16.49)	27 (13.99)
12001-15,000 US$ 166.68 – 208.33	38	9.82	22 (11.34)	16 (8.29)
15001 -30,000 US$ 208.34 -416.67	39	10.08	21 (10.82)	18 (9.33)
More than 30000 More than US$ 416.67	14	3.62	10 (5.15)	04 (2.07)

Table 25.2: Comparison of average household Income from different sources calculated prior to COVID-19 and during COVID-19 Lockdown Period

Activities	Product	The period from 1st July 2019 to 28th February 2020, prior to COVID-19 lock down			The period from 1st March 2020 to 30th October, 2020 during COVID-19 lockdown			Percentage fall/increase in income	Percent increase/decrease in number of HH
		Average Income in INR and US$ equivalent*	No of Households practicing	Per cent	Average Income in INR and US$ equivalent **	No of House holds practicing	Percent		
ASM activities	Color stone/ gold	36000 (498.96)	387	100	9760 (131.89)	208	53.75	73.57	46.25
Agriculture	Paddy-vegetables	28600 (396.40)	376	97.16	9300 (125.67)	206	53.23	66.78	43.93
Livestock – milk and small animals like goat/sheep and poultry	Milk-meat	4600 (63.76)	266	68.73	2400 (32.43)	105	27.13	42.83	41.6
Hunting of Game	Meat	240	104	26.87	3240 (43.78)	197	50.90	92.59***	24.03

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(Animals)		(3.33)							
Fishing	Fish	850 (11.78)	84	21.70	450 (6.08)	47	12.14	47.06	9.56
Non-timber Forest Produce	Bamboo shoot, Mahua flower, Sal and Siali leaves for plate making	1560 (21.62)	312	80.62	3540 (47.84)	352	90.96	55.93***	10.34
Other Common property Resources	Mutha Kand, fuel wood	4300 (59.60)	141	36.43	2200 (29.73)	129	33.33	48.84	3.10
Other (wage)	MGNREGA, wage from seasonal agriculture	25000 (346.50)	248	64.08	2800 (37.84)	28	7.24	88.88	56.84
Total/average		101150 (1401.94)	240		33690 (455.27)	156		67.53	35.00

*Exchange rate 1US$ = INR 72.15 (February 2020)

**Exchange rate 1US$ = INR 74.00 (November 2020)

Table: 25.3: Average Estimated value of household consumption prior to COVID-19 and During Lockdown Period

Expenditure Type	The period from 1st July 2019 to 28th February 2020, prior to COVID-19 lock down		The period from 1st March 2020 to 30th October, 2020 during COVID-19 lockdown		Percentage fall/increase in expenditure
	No of HH	INR	No of HH	INR	
Food purchases (vegetables, milk, bread, sugar, etc) –per day	387	8300	387	5685	31.51
Bulk foods (rice, grains, dal etc)	387	25000	387	11590	53.64
Buying of animal feed	292	4000	292	1680	58.00

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Luxury foods (e.g. fish and meat, coffee, tea, sweets)	387	3800	387	1750	53.95
Clothing	387	3970	387	1550	60.96
Medicine and doctor consultation	298	3760	298	1640	95.74
Transport fuel/transport	149	7850	149	1480	81.15
Buying of farm gadgets	247	1650	247	230	86.06
Buying of mining gadgets	278	2100	278	125	94.05
Electric bill	296	2100	296	1460	30.48
Insurance premium	22	340	296	200	41.18
Shoes	188	400	22	180	55.00
Home improvement	297	1400	188	340	75.71
Household items (e.g. kitchen utensils, furniture) - 3	301	2280	297	540	76.32
Education (school fees, books)	152	1870	301	880	52.94
Marriages, births, and burials	98	8750	152	2760	68.46
Selected religious celebrations	387	6700	98	1600	74.78
Savings in cash & kind	387	16880	387	0	-
Total	274	101150	269	33690	66.69

*Exchange rate 1US$ = INR 72.15 (February 2020)

**Exchange rate 1US$ = INR 74.00 (November 2020)

ASM and the Miners:

Table 26. Description of the nature of work of the ASM miners (N=387)

Nature of Work	Count N=387	Percent	Males N=194	Females N=193
Digger	331	85.53	174 (89.69)	157 (81.35)
washer	056	14.47	20 (10.31)	36 (18.65)

Table 27. The number of ASM miners having a valid mining license. N=387

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Valid mining license	Count N=387	Percent	Male –N=194	Female-N=193
Yes	0	0	0	0
No, expired	0	0	0	0
No, never had	0	0	0	0
Other -informal	387	100	194 (100)	193 (100)

Table 28: Mining method adopted by the ASM miners

Mining Method	Count N=387	Percent	Males N=194	Females N=193
Open pit	338	87.34	155 (79.90)	183 (94.82)
Underground	43	11.11	33 (17.01)	10 (5.18)
Use of explosives	06	01.55	06 (3.09)	0

Table 29: Equipment used for mining by the ASM miners N= 387

Equipment used	Count N=387	Percent	Males N=194	Females N=193
Only Hand tools (e.g., shovel, pick)	339	87.60	148 (76.29)	191 (98.96)
Mechanized (e.g., excavator, pumps) and other hand tools	07	1.81	06 (3.09)	1 (0.52)
Pumps and other hand tools	44	11.37	40 (20.62)	04 (2.07)

Table 30: The number of years spent in mining by the ASM miners

Years doing Mining work	Count N=387	Percent	Male –N=194	Female-N=193
1-3	43	11.11	19 (9.79)	24 (12.44)
4-7	56	14.47	27	29

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			(13.92)	(15.03)
8-10	124	32.04	56 (28.87)	68 (35.23)
More than 10	164	42.38	92 (47.42)	72 (37.30)

Table 31: Distance of the mine from the homes of the ASM miners

Distance of mine from home in kms	Count N=387	Percent	Male –N=194	Female-N=193
Less than 1	13	3.36	4 (2.06)	09 (4.66)
1-3	212	54.78	102 (52.58)	110 (56.70)
4-7	87	22.48	31 (15.98)	56 (29.01)
8 or more	75	19.38	57 (29.38)	18 (9.33)
Total	387	100	194	193

Table 32: Selling of products by the ASM miners - multi-choice

Place/Agents of Selling Products	Count N=387	Percent	Male –N=194	Female-N=193
Licensed buyer	0	0	0	0
Unlicensed buyer	331	85.53	161	170
Other -brokers	56	14.47	33	23

Table 26: Household has bank account

Bank Account	No of HH having	Percent
Yes	318	82.17
No	069	17.83

Table 33 : No of household as member of a community-based organization (incl. savings and credit groups-SHGs

Member of a community-based	Count N=387	Percent

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organization		
Yes	154	39.79
No	233	60.21

Table 34: The access of ASM miners to productive capital assets for mining- multi-choice

Access to Capital assets for mining	Count N=387	Percent	Male –N=194	Female-N=193
Manual Equipment	387	100.00	194 (100)	193 (100)
Technology	48	12.40	46 (23.71)	02 (1.04)
Finance (formal institutional, like bank)	04	1.03	04 (2.06)	0

Table 35: The access of ASM miners to social capital assets

Access to social Capitals	Count N=387	Percent	Male –N=194	Female-N=193
Formal association (SHG)	154	39.97	0	154 (79.79)
Informal network	023	5.94	23 (11.86)	0
No Access	210	54.26	171 (88.14)	39 (20.21)

Table 36: The access of ASM miners to financial capital assets for mining – multi-choice

Access to financial Capitals for mining	Count N=387	Percent	Male –N=194	Female-N=193
Formal Institutions	0	0	0	0
SHG Revolving Fund	154	39.79	0	154 (79.79)
Savings in cash	212	54.78	125 (64.43)	87 (45.08)
Savings from livestock & harvests	374	96.64	192 (98.97)	182 (94.30)

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Table 37: The reasons of feeling of exclusion of ASM miners from accessing assets: multi-choice

Reasons of feeling of exclusion	Count N= 387	Percent	Male –N=194	Female-N=193
Of the community group you belong to	262	67.70	113 (58.25)	149 (77.20)
You are a woman/man	233	60.21	55 (28.35)	178 (92.23)

Table 38: The capacity and ability issues that constrain the access of ASM miners to assets – multi-choice

Capacity and ability issues that constrain the access of ASM miners to assets	Count N= 387	Percent	Male –N=194	Female-N=193
Constraints relating to Technical and managerial Skills	288	74.42	134 (69.07)	154 (79.79)
Constraints relating to Financial Capacity	314	81.14	128 (65.98)	186 (96.37)
Constraints relating to New Technology acquisition	300	77.52	189 (97.42)	111 (57.51)
Constraints relating to access to Information	312	80.62	133 (68.56)	179 (92.75)
Gender constraint	233	60.21	55 (28.35)	178 (92.23)
Constraints due to Caste/tribe	344	80.89	164 (84.54)	180 (92.78)

Table 39: The constraints faced by the ASM communities in accessing markets - multi-choice

Market access constraints	Count N=387	Percent	Male –N=194	Female-N=193
Illegal trade	265	68.48	127 (65.46)	138 (71.50)
Poor prices	176	45.48	84 (43.30)	92 (47.67)
Fluctuating prices	148	38.24	56 (28.87)	92 (47.67)
Sex -gender	178	46.00	0	178

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				(92.23)
Market Information from formal channel	255	65.89	76 (39.18)	179 (92.75)
Too much dependence on brokers	182	47.03	93 (47.94)	89 (46.11)

Table 40: The types of information the ASM miners need in accessing assets -multi-choice

Information need in accessing assets	Count N=387	Percent	Male –N=194	Female-N=193
Mineral deposits	245	63.31	121 (62.37)	124 (64.25)
Markets	242	62.53	107 (55.15)	135 (69.95)
Laws and regulations	321	82.95	153 (78.87)	168 (87.05)

Table 41: The time of payment to ASM miners

How you are paid	Count N=	Percent	Male –N=194	Female-N=193
Daily	0	0	0	0
Weekly	195	50.39	64 (32.99)	131 (67.88)
Monthly	130	33.59	74 (38.14)	56 (29.02)
In concentrate	19	4.91	13 (6.70)	06 (3.10)
In ore	43	11.11	43 (22.16)	00

Table 42: Specify approximately, in percentages, where your mine earnings are spent -multi-choice

Spending of Income	% of income spent N=387	% of income spent by Males N=194	% of income spent by Females N=193
Onsite (food, alcohol, etc.)	10.16	15.00	5.29
Buying groceries and	46.24	43.50	49.00

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food and household amenities			
Health care	2.72	2.3	3.14
Repay of debt	3.24	2.5	3.98
Purchasing clothes	3.00	2.0	4.00
Investing in Housing/House repair	7.00	7.96	6.04
Spending in marriages, religious ceremonies and funerals	5.74	5.24	6.24
Investing in business	5.74	4.50	7.00
Investing in buying agricultural assets/Land/ Buying Agri-inputs: Seeds, fertilizers or hire laborers	7.26	10.00	4.50
School fee/ Education of children	6.16	5.00	7.33
Savings	2.74	2.00	3.48

Table 43: Have you ever been arrested whilst/for mining

Ever arrested whilst/for mining	Count N=387	Percent	Male –N=194	Female-N=193
Yes	54	13.95	39 (20.10)	15 (7.77)
No	333	86.05	155 (79.90)	178 (92.23)

Table 44: Nos forced to pay a bribe at a mine/for being linked to mining

Ever paid bribe	Count N=387	Percent	Male –N=194	Female-N=193
Yes	124	32.04	81 (41.75)	43 (22.28)
No	263	67.96	113 (58.25)	150 (77.72)

Table 45: Nos received financial support for mining

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Ever received financial support for mining	Count N= 387	Percent	Male –N=194	Female-N=193
Yes	195	50.39	103 (53.09)	92 (47.67)
No	192	49.61	91 (46.91)	101 (52.33)

PARTICIPATION IN POWER AND DECISION MAKING (multi-choice)

Table 46: Participation of the miners in decision making at the mining operation -multi-choice

Participation in Decision Making	Count	Percent	Male – N=194	Female-N=193
Access to mineral deposit	232	59.95	104 (53.61)	128 (66.32)
Production	261	67.44	138 (71.13)	123 (63.73)
Selling	216	55.81	114 (59.94)	102 (52.85)
Sourcing Inputs	214	55.29	108 (50.47)	106 (54.92)
Waste Disposal	126	32.56	60 (31.55)	66 (34.20)

Table 47: What constraints do you face in decision making at the mining operation – multi-choice

Constraints you face in Decision Making in Mining Operation	Count N=387	Percent	Male – N=194	Female-N=193
Exclusion	155	40.05	64 (33.00)	91 (47.15)
Disrespect	162	41.86	64 (33.00)	98 (50.78)
Conflict	148	38.24	62 (31.96)	86 (44.56)

Table 48: What decision making do you participate in at the local government level?

Participation in	Count	Percent	Male –	Female-

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decision making in Local government level			N=194	N=193
Consultation in review and development	112	28.94	87 (44.84)	25 (12.95)
Consultation in Policy, by-laws, programs	92	23.77	54 (27.84)	38 (19.69)
None	183	47.29	53 (27.32)	130 (67.36)

Table 49: What constraints do you face in decision making at the local government level?

Constraints you face in Decision Making in local government level	Count	Percent	Male – N=194	Female- N=193
Exclusion	54	13.95	11 (5.67)	43 (22.28)
No consultation	272	70.28	134 (69.07)	138 (71.50)
Inadequate consultation	61	15.77	49 (25.26)	12 (6.22)

Table 50: What decision making do you participate in at the national government level?

Participation in decision making in the national government level	Count	Percent	Male – N=194	Female- N=193
None	387	100	194 (100)	193 (100)
Consultation in review and development	0	0	0	0
Consultation in Policy, by-laws, regulations, programs	0	0	0	0

Table 51: What decision making do you usually control at the national government level?

Decision making do	Count	Percent	Male –	Female-

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you usually control at the national government level			N=194	N=193
Application for mining rights	0	0	0	0
Reporting is required by law	0	0	0	0
None	387	100	194 (100)	193 (100)

MINERS' NEEDS, PRIORITIES, AND PERSPECTIVES ON SERVICE DELIVERY (multi-choice)

Table 52: What are miners' practical gender needs?

Miners' practical gender needs	Count N=387	Per cent	Male –N=194	Female-N=193
Training to improve skills	221	57.11	106 (54.64)	115 (59.59)
Improved income from ASM	212	54.78	110 (56.70)	102 (52.85)
Equipment and technology for ASM	300	77.52	189 (97.42)	111 (57.51)
Health and safety Information and services to optimize benefits from ASM	227	58.66	117 (60.31)	110 (56.99)
Alternative livelihoods	265	68.48	111 (57.22)	154 (79.79)

Formalization of ASM

Table 53: How can men's and women's access to mineral deposits and services (production and marketing) be improved?

Ways men's and women's access to mineral deposits and services (production and marketing) be improved	Count	Per cent	Male – N=194	Female-N=193

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Formalization of mining	334	86.30	178 (91.75)	156 (80.83)
Formal Access to mineral deposit and extraction	287	74.16	144 (74.23)	143 (74.09)
Selling through formal channel	325	83.98	167 (86.08)	158 (81.87)
Provision of information	366	94.57	187 (96.39)	179 (92.75)
Access to finance	314	81.14	128 (65.98)	186 (96.37)

Table 54: Are there women miners' associations?

Women's Miner's Association	Count	Per cent
Yes	0	0
No	387	100

Table 55: Would a women's association facilitate their needs being met

Women's Miner's Association will facilitate their needs being met	Count	Per cent	Male – N=194	Female- N=193
Yes	184	47.55	06 (3.09)	178 (92.23)
No	203	52.45	118 (60.82)	85 (44.04)

SOCIAL/CULTURAL CONTEXT (multi-choice)

Table 56: Which structures (social, cultural, economic, institutional, and legal) that affect ASM must be transformed to improve the livelihood outcomes of women and men? Multi-choice Table

Structures (social, cultural, economic, institutional, and legal) that to be transformed to improve the livelihood outcomes of women and men	Count	Per cent	Male – N=194	Female- N=193
Government departments & agencies	264	68.22	138 (71.13)	126 (65.28)
Law enforcement and judiciary (courts)	227	58.66	128 (65.98)	99 (51.30)

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Traditional authorities	143	36.95	89 (45.88)	54 (27.98)
Civil society, and community organizations	142	36.69	67 (34.54)	75 (38.86)
Miners' associations	182	47.03	92 (47.42)	90 (46.63)
Research institutions	18	4.65	17 (8.76)	01 (0.52)
Service providers, including financial institutions	314	81.14	128 (65.98)	186 (96.37)

Table 57: Nos. those understand the laws that affect rights to access mineral deposits

Understand the laws that affect rights to access mineral deposits	Count	Per cent	Male –N=194	Female-N=193
Yes	185	47.80	136 (70.10)	49 (25.39)
No	202	52.20	58 (29.90)	144 (74.61)

Table 58: Nos. showing interest for the laws to be changed to improve the access of men and women in ASM to mineral deposits?

Laws to be changed to improve the access of men and women in ASM to mineral deposits	Count	Per cent	Male –N=194	Female-N=193
Yes	362	93.54	188 (96.91)	174 (90.16)
No	25	6.46	06 (3.09)	19 (9.84)

Table 59: Do environmental impacts of ASM affect women more than men?

Do environmental impacts of ASM affect women more	Count	Per cent	Male –N=194	Female-N=193

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than men				
Yes	207	53.49	73 (37.63)	134 (69.43)
No	180	46.51	121 (62.37)	59 (30.57)

Table 60: Is it easy for you to comply with the mining law?

It is easy for you to comply with the mining law	Count	Per cent	Male –N=194	Female-N=193
Yes	0	0	0	0
No	387	100	194 (100)	193 (100)

Table 61: Are you comfortable dealing with law enforcement agents and courts?

You are comfortable dealing with law enforcement agents and courts	Count	Per cent	Male –N=194	Female-N=193
Yes	12	3.10	5 (2.58)	7 (3.63)
No	375	96.90	189 (97.42)	186 (96.37)

Local development

Table: 62. The reasons for people engaged in ASM

Reasons cited by respondents	Count N=387	%
Local population growth and economic need	178	46.0
Diminished soil fertility or agricultural productivity, decreased cash-crop profitability, inadequate access to farming inputs, market failures, natural disasters and climate extremes	198	51.16
Loss of agriculture input subsidies (e.g., fertilizers), and	175	45.22

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changing rainfall patterns		
Supplementary income source / a means of survival for impoverished farmers	192	49.61
Availability of gemstone in local area & high value of the gem stone/gold as important source of livelihood/ inability to find other work	324	83.72
Aspiration of becoming rich	187	48.32
Lack of alternative livelihood opportunity	287	74.16
Brokers pay advance money to work	88	22.74
Traditional family occupation/ cultural and social attachments to this lifestyle and its acceptance by the community	233	60.21
Income source to purchase necessities of daily life /Maintaining or improving the standard of living of people	244	63.05

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Table 63: The ways ASM has changed miners' and their families' lives

The indicators of change in miners' and their families' lives brought by ASM	Count	%
"Poverty trap" of low productivity and indebtedness	176	45.48
Child labor and reduced attendance in schools	114	29.46
Female directly produce income for themselves or their families	187	48.32
Female see ASM work as means of raising capital to start businesses that will allow them to quit mining	86	22.22
Provides employment during dry season	132	34.11
Supports fund for Education	154	39.79
Supports fund for health care needs	122	31.52
Supports fund for Housing	43	11.11
Income to meet Family food security	139	35.92

Table 64: Relation of ASM to education

Relation of ASM to Education	Count	%
Income from ASM helps more children sent to school	154	39.79
Many children dropout as diverted to mining activities and engaged as child labour	114	29.46
School attendance becomes less as children become irregular	114	29.46

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Skill training and second chance education will help adult miners	233	60.21

Health Hazards:

Table 65: Health Hazards Female Miners exposed to:

Types of health hazards Female are exposed to	Count N=193	%
COVID-19 vulnerability (incidences of coronary artery disease and high blood pressure (hypertension), diabetic condition)	52	26.94
COVID-19 infected (diagnosed)	18	9.33
Chemical hazard –mercury inhalation	19	9.84
Number of Female suffering from neurological, kidney and autoimmune impairment	14	7.25
Numbers showing symptoms of neuropsychiatric symptoms such as fatigue, insomnia, anorexia, shyness, withdrawal, depression, nervousness, irritability and memory problems	16	8.29
Numbers suffering from waterborne and vector-borne diseases,	38	19.69
Number suffering from sexually transmitted infections including HIV/AIDs.	04	2.07
Musculo-skeletal disorder - chronic injury and fatigue from carrying heavy materials over long distances, and bending over in awkward positions,	12	6.22
Drug and alcohol abuse	14	7.25
Violence	32	16.58
Nutritional deficit	38	19.70
Respiratory diseases such as silicosis, chronic bronchitis or tuberculosis	13	6.74
Pregnant Female exposed to mercury- pregnancy can experience detrimental effects.	08	4.15

Table 66: Health threats in ASM communities (Response of Males)

Types of hazards male miners are exposed to	Count – Male N=194	%

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COVID-19 vulnerability (incidences of coronary artery disease and high blood pressure (hypertension), diabetic condition)	74	38.14
COVID-19 infected (diagnosed)	23	11.86
Chemical hazard –mercury inhalation	33	17.01
Number of miners suffering from neurological, kidney and autoimmune impairment	23	11.86
Numbers showing symptoms of neuropsychiatric symptoms such as fatigue, insomnia, anorexia, shyness, withdrawal, depression, nervousness, irritability and memory problems	14	7.22
Numbers suffering from waterborne and vector-borne diseases,	33	17.01
Number suffering from sexually transmitted infections, HIV/AIDs, and tuberculosis.	18	9.28
Musculo-skeletal disorder - chronic injury and fatigue from carrying heavy materials over long distances, and bending over in awkward positions,	15	7.73
Drug and alcohol abuse	56	28.87
Violence	11	5.67
Nutritional deficit	54	27.84
Respiratory diseases such as silicosis, chronic bronchitis or tuberculosis	41	21.13
Pregnant Female exposed to mercury- pregnancy can experience detrimental effects.	0	0

Table 67: What healthcare services do you have accessed in the last 1 year prior to COVID-19? Multi-Choice

Current health Services accessed by ASM communities	Count	%
District Hospital	74	19.12
Community Health Centre -CHC	108	27.91
Primary Health Centre -PHC	111	28.68
Sub-Centres	104	26.87
Private Health Clinics (private Health care providers)	016	01.87

Table: 68: The needs of Female miners in ASM

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The needs of Female miners in ASM	Count N=193	%
Policies aimed at legalizing and regularizing ASM	107	55.44
Alternative livelihood opportunities for Female artisanal miners	154	79.80
Creation of Female-focused services - child care centres	64	33.16
Skill training & second chance education	112	58.03
Prevention of gender discrimination at excavation and mine sites	178	92.23
Insurance	176	91.19
Organizing Female miners' cooperative/association	118	61.14

Table 69: The extent of access of female miners to valuable assets in ASM

The extent of access of Female to valuable assets in ASM	high	medium	low
Ownership or rights over resources	0	0	08 (4.15)
Involved in decision making or consulted about mining plans including finding new sites or returning to old ones	0	2 (1.04)	4 (2.07)
As a paying activities.	0	132 (68.39)	61 (31.61)
Access to materials like high grade rocks/ores	0	40 (20.73)	153 (79.27)

Table 70: The opportunities for Female in ASM –multi-choice

Opportunities for Female in ASM	Count N=193	%
Successful female miners have diversified into other economic activities.	32	16.58
Earnings from ASM increase Female's social status.	67	34.72
Mining income helps Female support their households.	128	66.32
Some Females are breaking gender barriers to open new pathways for others.	08	4.15
Some Female were renting processing machines, and a few were gaining stature as "big persons" in the mining zone	05	2.59
Female are in key decision making roles in ASM sector	02	1.04
Ownership or rights over resources	08	4.15

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Table 71. Interventions needed for empowerment of Female in ASM

Interventions needed for empowerment of Female in ASM	Count	%
Second chance education/ Skill training/ vocational training to the aspiring artisans	112	58.03
Providing alternative livelihood opportunities	154	79.80
Labour saving technology/ enhance Female's access to equipment and technology	111	57.51
Encouraging participation in policy and decision making	69	35.75
Organizing Female cooperatives- Institutional support and services	88	45.60
Leadership training	86	44.56
Land, license and legal protection	129	66.84
Access to finance	112	58.03
Information	179	92.75

Children

Table 72: Children's involvement in ASM (adult response)

Children's involvement in ASM (adult response)	Count N=387	%
Yes, Children present in mine sites	244	63.05
Yes, Children provide supplementary services (e.g. water transport, carry food)	238	61.50
Yes, Children participate in mining activities	244	63.05
Forced Labour	93	24.03
Yes, minerals or money is extorted from mine workers	127	32.82

Table 73: The reasons of involvement of children in ASM (adult response)

The reasons of involvement of children in ASM (adult response)	Count	%
Parents and other family members are involved	232	59.95
Not enrolled in school	154	39.79
Get some remuneration	216	55.81
Peer groups are involved	225	58.14
Alternative Livelihood Opportunities for Families to	161	41.60

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Address Intergenerational Mining Involvement		

Table 74: Activities performed by children in ASM (adult response)

Activities performed by children in ASM (adult response)	Count N=387	%
Panning	134	34.63
Ore sifting	138	35.66
Amalgamation	112	28.94
Surface mining	172	44.44
Supplying food and water	178	46.00

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Table 75: Health hazards children exposed in ASM (Adult and local health facility response)

Health hazards children exposed in ASM (Adult and local health facility response)	Count N=114 children	%
Chemical hazard –mercury inhalation	12	10.53
Numbers showing symptoms of neuropsychiatric symptoms such as fatigue, insomnia, anorexia, shyness, withdrawal, depression, nervousness, irritability and memory problems	8	7.02
Numbers suffering from waterborne and vector-borne diseases.	11	9.65
Drug and alcohol abuse	14	12.28
Violence	41	34.96
Nutritional deficit	22	19.30
Respiratory diseases such as silicosis, chronic bronchitis or tuberculosis	07	6.14

Table 76: Access of children to education (adult response and school record)

Access of children to education (adult response)	Count N=114	%
Enrolled in Schools	98	85.96
Enrolled but do not attend	67	58.77
Enrolled and casually attend	31	27.19
Drop out	16	14.03

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