

# Toolkit

Artisanal

for  
Implementing of  
Small-scale Mining  
Baseline Surveys  
in Africa

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Communities and Small-Scale Mining (CASM)  
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As part of the

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Program for Improvements to the Profiling of Artisanal and Small-Scale  
Mining Activities in Africa and the Implementation of Baseline Surveys

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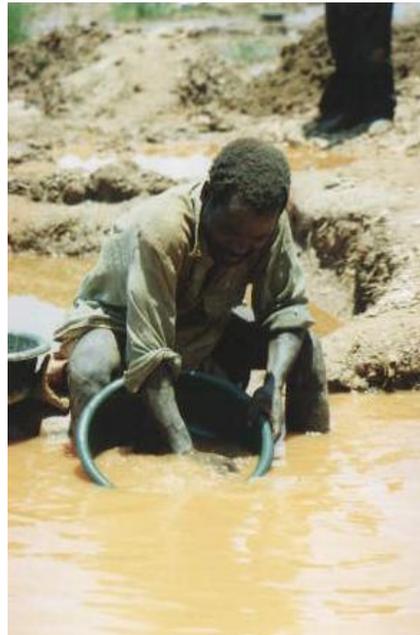
## **PREFACE**

# CHAPTER 1 INTRODUCTION

## 1.1 Background and objectives

Artisanal and small-scale mining (ASM) form a thriving economic sector in at least 25 countries on the African continent, providing direct employment for as much as 2.5 million people, and subsistence to more than 20 million people.<sup>1,2</sup> While artisanal mining can reduce poverty and promote sustainable livelihoods, it frequently has a number of harmful effects, including environmental degradation, worse forms of child labor, and poor health and safety standards.

Multilateral organizations, including the World Bank, the United Nations and the International Labour Organization, as well as a number of national governments and institutions have sponsored diagnostic studies on artisanal and small scale mining in specific communities, regions, and countries. A main purpose of these studies has been to obtain baseline data required for policies designed to eliminate the undesirable side-effects of ASM. Although many of these reports provide valuable insights and useful data, information presented in others is fuzzy, inaccurate or too general to be of practical value. This observation reflects limitations of baseline research of an often informal and clandestine activity.



*Gold panner, Mozambique*

Recognizing the need for a better understanding of the role of ASM in Africa, the Mining Policy and Reform Division of the Oil, Gas, Mining and Chemicals Department of the World Bank, with financial support from the Austrian Consultant Trust Fund, the Dutch Consultant Trust Fund, and the Communities and Small-scale Mining (CASM)<sup>3</sup> Secretariat, initiated a research program aimed at improving profiling of the sub-sector and the implementation of baseline surveys (2004). More specifically, the objective of the program has been to develop a toolkit for future profiling of artisanal and small-scale mining in Africa. The current initiative is guided by the Yaoundé Vision Statement “that

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<sup>1</sup> International Labour Organization. Social and labour issues in small-scale mines. Geneva, 1999.

<sup>2</sup> United Nations Department for Economic and Social Affairs (UNDESA). Poverty Eradication & Sustainable Livelihoods: Focusing on Artisanal Mining Communities. SPPD Project RAF/99/023. Final Report. New York – Geneva, June 2003.

<sup>3</sup> CASM is a multi-donor networking and coordination facility, which was founded in 2001 to collect and share the accumulated wisdom and experiences about work with artisanal and small-scale mining communities.

policies and programs directed towards the sub-sector will contribute to sustainably reduce poverty and improve livelihoods in African Artisanal and Small-scale Mining (ASM) communities by the year 2015 in line with the Millennium Development Goals”.<sup>4</sup>

ASM is an important livelihood strategy because it provides employment in rural areas where job alternatives are sparse; it offers an income to many poor people; it may require little investment capital or formal education; and –if managed well at a national level- can be a source of tax income and revenues for the governments of low-income but resource rich countries. In this context, improving methodologies and approaches for profiling ASM is essential for several reasons. First, it will lead to a more comprehensive understanding of the social, economic, political, governance, environmental and technological aspects of the activity and its impact on poverty reduction. Second, it will provide the knowledge base and data required for designing and implementing policies and assistance programs adequate to reduce poverty and achieve social, economic and environmental sustainability. And finally, it will permit to identify a set of indicators suitable for monitoring and measuring progress toward these developmental objectives over time in different regions and countries.

Before presenting the tools, we will in the remainder of this introduction briefly explain how we selected and developed the toolkit and its various components.

## **1.2 Developing the toolkit**

The preliminary version of the present toolkit was the outcome of a desk study that mainly used two sources of information. First, we reviewed a total of 23 baseline studies on artisanal and small-scale mining activities, which were conducted between 1987 and 2002 in 15 African countries. We evaluated what data was missing, what data was present, and in what form (e.g. quantitative or qualitative). The review demonstrated that the existing baseline studies varied extensively in scope, detail and depth of coverage. Many of the reports did not provide the type of data required for the design of policies and programs aimed at transforming the sector into a more socially acceptable, environmentally sustainable, and economically viable activity. Nor did many baseline studies allow for study replication and monitoring of progress towards poverty reduction.

Our second source of information and inspiration has the Sustainable Livelihoods Framework of the Department for International Development (DFID). Because of its focus on poverty and livelihoods, this framework has been used both in assessing past baseline studies and in drafting a toolkit for future profiling work.<sup>5</sup> We explain this framework in more detail below.

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<sup>4</sup> United Nations Economic Commission for Africa and United Nations Department for Economic and Social Affairs. Seminar on Artisanal & Small-scale Mining in Africa: Identifying Best Practices & Building the Sustainable Livelihoods of Communities. Recommendations “Yaoundé Vision Statement”. Yaoundé, Cameroon. November 2002.

<sup>5</sup> DFID Department for International Development. Sustainable Livelihoods Guidance Sheets. [http://www.livelihoods.org/info/guidance\\_sheets\\_rtf/Sect2.rtf](http://www.livelihoods.org/info/guidance_sheets_rtf/Sect2.rtf) | download 08/2003.

The draft-toolkit was presented at the CASM Annual General Meeting and Learning Event held September 7-10, 2003 in Elmina, Ghana. At the same event a workshop entitled “Building a toolkit for profiling artisanal mining” was conducted. During this workshop, the consulting team presented a checklist of critical issues and information necessary as well as benchmark indicators required to monitor progress to a multi-national audience. More than 20 participants from government agencies, international organizations, universities and consulting firms attended. Their recommendations were included in the first draft toolkit.

Thinking up tools from behind a desk is something different from using these tools in the field. In order to find out if the tools made sense in the real world, the toolkit was field-tested in an artisanal gold mining community in Nigeria in 2004/5. This pilot baseline study was part of a broader effort aimed at promoting more sustainable livelihoods in artisanal mining communities in Nigeria; a joint effort by Communities and Small-scale Mining (CASM) and the Nigerian Ministry of Solid Minerals Development (MSMD). This effort, in turn, is one component of a larger World Bank-funded program to promote the *Sustainable Development of Mineral Resources* in Nigeria.

The Nigerian initiative involved training of a team of Nigerian researchers in using the toolkit (October 2004), field testing of the survey instruments, data collection in the Birnin Gwari artisanal gold mining communities (November 2004), data analysis, and report writing. This step-by-step experience, combined with observational visits to artisanal Gypsum and Barite mining suites, led to many changes to the toolkit. The result is the booklet in your hands.

The objective of the toolkit is to establish a norm or standard which specifies contents and minimum data requirements of baseline studies. Standardization will increase chances that future profiling work will deliver the necessary information. The “kit” should serve as an operating or instruction manual describing the basic instruments and tools required in profiling work. This toolkit includes the following manuals and tools:

- A brief explanation of the Sustainable Livelihoods approach (Chapter 2)
- A work planning guide (Chapter 3)
- A checklist of critical issues and information necessary (Chapter 4)
- A extensive set of benchmark indicators and a list of 25 key indicators (Chapter 5)
- Methodological guidelines (Chapter 6)
- References or links to other useful resources (Chapter 7).
- Suggested survey templates (Appendix A)
- A template for a baseline report (Appendix B), and
- Model Terms of Reference (Chapter 8; Appendix C)

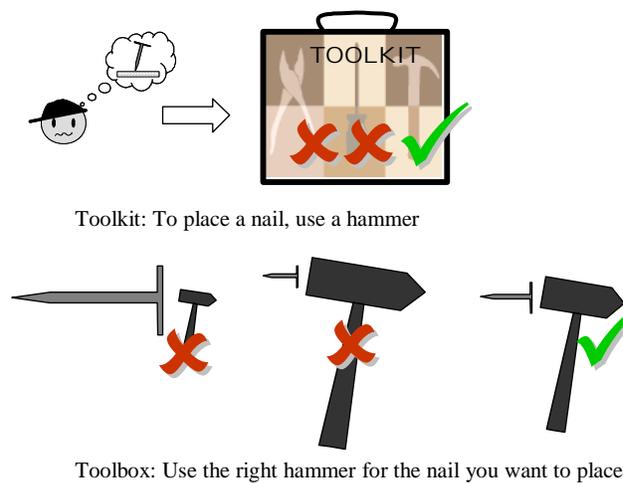
### **1.3 From toolkit to toolbox**

The toolkit provides general guidelines for conducting baseline studies in artisanal and small-scale mining communities. These guidelines had to be generic; applicable to the variety of field experiences researchers may encounter in artisanal and small—scale

mining communities throughout the African continent. They must be useful to researchers conducting a baseline study in a stone quarry in the Democratic Republic of Congo, in an Angolan diamond mining region, and in an artisanal gold mining community in Nigeria. They should capture the livelihood experiences of men, women and children, who may be migrants or long-term settlers, belonging to a great diversity of tribal groups with different cultural rules and customs.

On the other hand, a good baseline study must capture the specific working conditions, living circumstances, features of the natural environment, cultural habits and norms, and many other characteristics of the study area. Hence the tools and instruments presented in this kit should be considered suggestions and examples. It is the researchers' job to transform the toolkit into a toolbox that serves his or her particular purpose, and reflects the local reality. To speak metaphorically: the toolkit manual may advise using a hammer to put a nail into the wall. Yet it is the carpenter who ultimately decides what nail fits the purpose, and what hammer is most appropriate to use (Figure 1.1)

*Figure 1.1 From toolkit to toolbox*



You must decide what tools are useful to you and adapt the instrument to the field conditions. Once you have decided that you want to conduct household interviews, for example, you should make the appropriate changes to the household survey template. Next you would test the new instrument and keep changing it until it works for you and the people you are working with.

It is our hope that the final toolkit is a useful, transparent, and insightful field guide for researchers. We also hope that the data collected following this approach will provide adequate building blocks for policy interventions aimed at promoting more sustainable livelihoods for artisanal and small-scale miners, their families, and those millions of other rural people living near and depending on the mines.

## CHAPTER 2 THE SUSTAINABLE LIVELIHOODS APPROACH

### 2.1 What are Sustainable Livelihoods?

Poverty alleviation programs increasingly focus on “sustainable livelihoods”. Turning away from a focus on Gross Domestic Product (GDP) and other macroeconomic indicators, the Sustainable Livelihoods approach places people at the center of development. This means for baseline studies in artisanal mining areas that the focus is not on geological deposits and mining equipment, even though these items are part of the analysis. Rather, the study should try to understand: What challenges do miners face in their every day working lives? How do people individually and as groups cope with shocks and vulnerabilities? What opportunities for advancement exist in families and communities? And many other questions that define the lives of miners, their families, and other members of mining communities.



*Tin-columbite miner in Nigeria*

Our guidelines are largely inspired by the Sustainable Livelihoods Guidance Sheets from the UK Department For International Development (DFID)<sup>6</sup>. This institution defines sustainable livelihoods in the following way:

“A livelihood comprises the capabilities (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base”<sup>7</sup>

The Sustainable Livelihoods approach recognizes the multiple dimensions of poverty. Its aim is to develop an accurate and dynamic picture of people in their environment. This provides the basis for identifying vulnerabilities and other constraints to livelihood development and poverty reduction. Such constraints can lie at the local level or in the broader economic and policy environment. An important principle of the approach is the analysis of strengths and opportunities in the face of constraints. These positive forces can derive from strong social networks, access to natural resources (e.g. a gold deposit), specific skills and knowledge (e.g. traditional mining knowledge), or any other factor that has poverty-reducing potential.

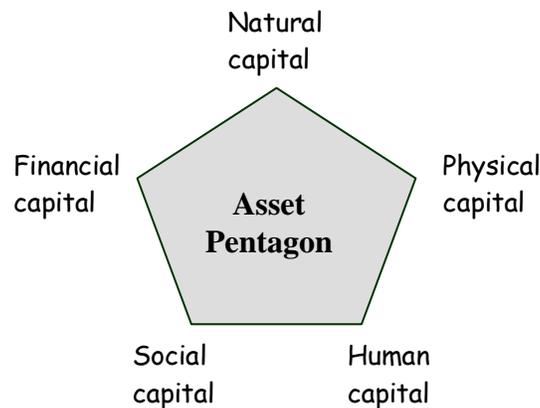
<sup>6</sup> [http://www.livelihoods.org/info/info\\_guidancesheets.html](http://www.livelihoods.org/info/info_guidancesheets.html)

<sup>7</sup> Source: Scoones, Ian. 1988. Sustainable Rural Livelihoods: A Framework for Analysis. IDS Working Paper 72. Brighton, U.K.: Institute of Development Studies, p. 5. From the DFID web site, URL: [http://www.livelihoods.org/info/info\\_guidancesheets.html](http://www.livelihoods.org/info/info_guidancesheets.html)

## 2.2 The Assets Pentagon

Livelihood, then, is a broad concept that encompasses virtually all aspects of daily life. Broadly, these aspects can be organized in five distinct categories of physical, natural, social, human, and financial capital. Throughout this report and in the tool kit we will refer to these five capital types, organized in the asset pentagon (Figure 2.1)

Figure 2.1. Asset Pentagon



- *Financial* capital represents (sources of) cash money and other valuables that are used as stock. It includes issues such as employment, savings, income, savings, the investment climate, and access to credit.
- *Natural* capital refers to natural resources, such as the forest, flora and fauna, sources of fresh water, and mineral resources. It includes both public goods such as clean air and biodiversity and assets that people use for production such as arable land and fruit trees.
- *Human* capital includes the “skills, knowledge, ability to work and good health that enable people to pursue different livelihood strategies and achieve their livelihood objectives.”<sup>8</sup> It includes education, access to information, good health, and social security
- *Social* capital refers to “connections among individuals; social networks and the norms of reciprocity and trustworthiness that arise from them”<sup>9</sup>. These social resources support people in pursuit of their livelihood objectives. Data on social capital cover organizational and institutional structures, conflicts, migratory networks, formal and informal social safety nets.

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<sup>8</sup> DFID, 2003: Sustainable Livelihoods Guidance Sheets.  
[http://www.livelihoods.org/info/guidance\\_sheets\\_rtfs/Sect2.rtf](http://www.livelihoods.org/info/guidance_sheets_rtfs/Sect2.rtf)

<sup>9</sup> Putnam, R.D. (2000). *Bowling alone. The collapse and revival of American community*. New York: Simon and Schuster., p. 19

- *Physical* capital comprises mainly physical infrastructure such as roads, railways, markets, clinics, schools and physical assets in mines such as equipment & machinery

The objective of using the Sustainable Livelihoods approach in baseline studies is to provide a database for policy makers concerned with poverty reduction in artisanal mining communities. To meet this objective, the data should reflect poor people's views and their own understanding of poverty– both its income and non-income dimensions. Most important, the baseline reports should facilitate the identification of practical priorities for action that are based on the views and interests of those concerned.



*Artisanal gold miners, Zimbabwe*

## CHAPTER 3 WORK PLANNING

### 3.1 Working Flow chart

This working flow chart provides a suggested sequence of activities, based on our work with the toolkit in Nigeria. As we stated above, the guidelines presented below should not be taken as a blueprint to be followed blindly. If there are activities that are relevant in your study area that are not listed here, please include them. If we list activities that are not relevant in your case, they may be left out.

Working flow chart	
1.	Read the Terms of Reference; Identify expectations, required and available skills
2.	Create a team; ensure balance in terms of disciplines, gender, and experiences
3.	Orientation field visit; define study boundaries, community relations; data on key indicators
4.	Working schedule; sample sizes, agenda, and division of responsibilities among participants
5.	Baseline study outline
6.	Secondary data collection; National and regional level indicators; background, history
7.	1 <sup>st</sup> Progress report; submit secondary data analysis, work plan, and research instruments
8.	Primary data collection; fieldwork in the communities
9.	Conclusion of fieldwork; official conclusion
10.	2 <sup>nd</sup> Progress report; draft methods section, working plan for completion
11.	Data analysis; data entry, coding, and analysis
12.	Report writing; See baseline study template
13.	Community consultation; Inform the community about findings and obtain feedback
14.	Delivery draft baseline report to client; invite comments
15.	Baseline study completion; submission to client and participating communities
16.	Final progress report; accomplishments; remaining challenges, and the way forward

*1. Read the Terms of Reference carefully.*

This first action may sound obvious, yet it is important to be aware of what is expected from you, and what you may expect from the client. Will you be able to complete the requested work within the set time limitations? Will you be able to assemble a team with the necessary skills? These things must be clear prior to signing the contract.

*2. Create an interdisciplinary team with all relevant skills.*

Even though the study focuses on mining, only a part of the required skills relates to mining engineering and geology. At least as important is to have someone on board with training and considerable field experience in the social sciences (anthropology, sociology). Other useful skills include medical anthropology/sociology and agricultural economy. Gender balance in the consulting team is recommended, and we strongly advise against an all-male or all-female team.

Perhaps most importantly, the consultant should assemble a *team*, not merely a collection of individuals with certain skills. This means that the various members must be able to work together and display a collaborative spirit.

### 3. *Undertake an orientation field visit(s)*

An orientation field visit should be undertaken in order to:

- Gain better understanding of the study site, the people, and their livelihood activities, including participation in mining.
- Obtain endorsement for the work from local authorities
- Explain communities the purpose of the study.
- Identify study needs in terms of time and human and capital resources.



*Barite mining girls, Nigeria*

Unless the following information is provided by the client, the local researchers should also use the first field visit to:

- Identify the size and boundaries of the target community or villages
- Collect data on the 25 key indicators (Section 5.4)
- Identify how the templates need to be changed to fit local conditions; what questions are relevant and how can they best be asked?

Depending on the size of the target mining area or community, more than one visit may be necessary for orientation.

### 4. *Develop a realistic working schedule*

The working schedule or agenda should include the number of days in the field, including a list of daily activities, and sample sizes of households or communities that will be interviewed. It also should present target dates for the completion of primary and secondary data collection and report writing. It is useful to assign responsibilities for the various project components to the different team members so that deadlines will not be missed due to misunderstanding about who was supposed to do what.

### 5. *Develop a baseline study outline*

The outline should list all foreseen chapters and annexes and a detailed description of the type of information presented in each of the chapters and sub-chapters. It also is useful to describe and locate the various tables, graphs, and other figures that will be used throughout the report. The baseline study outline template (Annex III) may be used as a guide.

An outline developed this early in the project is likely to be changing as the work progresses. This is fine and does not mean that making the outline in this stage is a waste of time. A good outline will help the researchers focus on the data requirements and remaining gaps. Ongoing review of how and where the data fit in will ultimately facilitate report writing.

### 6. *Collect secondary data*

It is recommended to collect secondary data prior to conducting field work, as this information will:

- Tell the researchers what data is readily available and what information needs to be collected first hand.

- Help research design. For example, census data on population numbers or the number of households will help develop a sampling strategy.
- Improve questioning both in terms of content and semantics.
- Prepare the researchers in practical ways for the field work; it helps understand what may be encountered on the ground.

Complete parts of the report outline that are primarily based on secondary data, such as the background section (history of artisanal mining in the country, the current mining industry) and part of the site description (national, regional, and local levels)

7. *Submit first progress report*, which should include:

- A draft of the desk study (secondary data analysis);
- A baseline study outline;
- A field study schedule;
- Research instruments, including revised templates;
- Possible obstacles that are identified and may challenge project progress.

8. *Fieldwork; primary data collection*

The bulk of the toolkit covers this activity. Chapters 4 and 5 provide suggestions on topics to be covered and indicators to be obtained, respectively. Virtually all of these items are represented in the model survey templates for communities, households, mine units, mining service providers, and environmental issues, and the guides for women’s and a children’s focus groups (Annex II). Chapter 6 provides further methodological guidelines to get at the various types of data.



*Female barite miners in Nigeria*

It is likely that the various team members will work on different aspects of the study, and perhaps even in different parts of the community or region simultaneously. It is important that the team comes together regularly to discuss findings, difficulties, interesting facts, and other relevant experiences.

9. *Conclusion of fieldwork*

Conclude the fieldwork with a vow of thanks to the community and community leaders so that everyone knows the data collection stage is now officially over. The closing ‘ceremony’ could be in the form of the offering of small gifts (e.g. snacks) or a concluding community meeting.

10. *Submit second progress report*, which should include:

- Draft methods section of the baseline study report;
- Detailed description of the fieldwork; activities, possible problems, and so forth;
- Summary of interesting or relevant findings based on preliminary observations;
- Working plan towards baseline report completion, including a time schedule and allocation of responsibilities among team members and other participants.

### *11. Data analysis*

This includes entry and coding – if data is of that nature- and is further described in Chapter 7.

### *12. Report writing*

When it seems that the (field)work is virtually over, one of the most important tasks remains to be completed; to shape the raw data -text blocks and tables- into a text that:

- Is pleasant to read, flows logically, and has no grammatical or stylistic errors.
- Contains all necessary and critical information without displaying redundancy
- Is accurate and does not contain inconsistent or confusing information
- Provides a clear understanding of the study site, its people (miners and non-miners), and their livelihood activities, to someone who has never visited the area.
- Offers recommendations and guidance to national policy makers.

Annex III provides a model baseline report outline.

### *13. Community consultation*

When the report has been written and is in a form that conclusions and recommendations can be drawn, it should be presented to each study community or, if there are too many, to their central representative. Community consultation has various purposes:

- Share the findings with the community. Much too often, communities participate in research without ever being informed about the findings. This is frustrating and decreases the chances of future collaboration.
- Invite feedback on the findings. Do community members feel that their livelihoods are accurately represented?
- Fill remaining gaps and answer new questions that have surfaced during the data analysis
- Inform the community about what they can expect next. In the least each participating village or community should receive a hard copy of the report once the final draft has been written.

### *14. Deliver the (draft) final report to the client*

A description is provided in the report writing template. Upon receipt of the draft, the client can comment, request clarifications or extensions, and ask for other revisions.

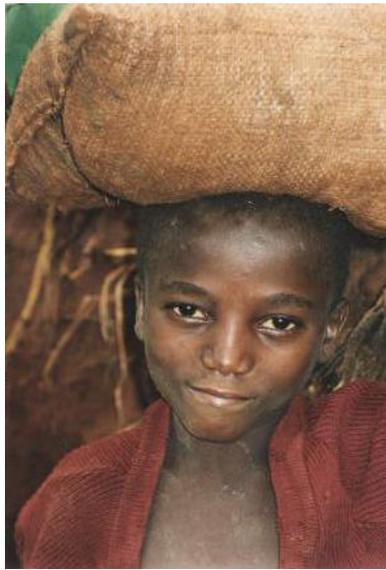
### *15. Report completion and submission*

Final revisions will be made, and the final report delivered to the client

Deliver the report also to the participating community or their representatives

The people who have participated in the study, hosted the researchers, assisted in data collection, and in other ways were crucial to success of the study should receive a copy of the final report.

16. *Submit final progress report*, which should include:
- Description of accomplishments during this last project stage
  - Schedule of activities with the number of days worked by each team member
  - Remaining issues, challenges, and gaps
  - The way forward, including recommendations for future baseline studies, suggested policy strategies, and an agenda of planned follow-up activities, if any.



*Child artisanal miner, Zimbabwe*

### 3.2 Understanding “study area” and “context”

The logical SLA framework divided into General issues describing the context and Specific issues describing the study area (see chapter 4) should be applied with consideration of the study context and area. Application of the toolkit varies with the “zoom” into the study area. That is, do you focus on the community, regional, or national level? To illustrate this concept it is useful to look at two possible baseline study scenarios (Table 3.1):

*Table 3.1 Possible scenarios for a baseline study depending on the scale of the target area*

National baseline study of country X	Local baseline study of “mine Z located near village Y”
<ul style="list-style-type: none"> <li>• For a national baseline study, profiling the entire ASM sub-sector of a country, issues like mining legislation are “specific ASM related issues”.</li> <li>• “ASM specific titling issues” refer to the legal framework</li> </ul>	<ul style="list-style-type: none"> <li>• For a local baseline study, issues like mining legislation represent “general issues” of the context.</li> <li>• “ASM specific titling issues” may refer to the relation between the concession owner and the miners’ cooperative.</li> </ul>

Table 3.1, continued...

<ul style="list-style-type: none"> <li>Mineral export regulation is a ASM specific issue, while the role of local traders may characterize a general context (“the middleman”)</li> </ul>	<ul style="list-style-type: none"> <li>Local traders are the specific issue, export regulations only describe the context.</li> </ul>
<ul style="list-style-type: none"> <li>As a national baseline study cannot analyze in detail every single community and household, issues like religious beliefs and traditions might be considered the context of the study area (example: Country X belongs mainly to Religion_1, Religions_2 and _3 represent minorities).</li> </ul>	<ul style="list-style-type: none"> <li>Religious beliefs and traditions might be relevant as very specific issues, defining the reaction of the mining community investigated. (example: As miners belong to Religion_1, their traditions allow/forbid ...).</li> </ul>
<ul style="list-style-type: none"> <li>Etc.</li> </ul>	<ul style="list-style-type: none"> <li>Etc.</li> </ul>
<b>Focus of baseline study</b>	<b>Focus of baseline study</b>
<ul style="list-style-type: none"> <li>Emphasis of the baseline study on macro or policy level, referring to individual cases of mine Z or community Y only as far as necessary illustrating consequences of the actual situation (examples)</li> </ul>	<ul style="list-style-type: none"> <li>Emphasis of the baseline study on micro or community level, referring to issues on macro/policy level only as far as necessary to correctly understand the community processes or reactions.</li> </ul>
<ul style="list-style-type: none"> <li>Probable use of baseline study: Design of sector policy reform project</li> </ul>	<ul style="list-style-type: none"> <li>Probable use of baseline study: Design of “grassroot” project</li> </ul>
<b>Expected Outcome</b>	<b>Expected Outcome</b>
<p>In both cases: The baseline study should compile all information that is <i>critical and necessary</i> for decision-makers in order to achieve poverty reduction and livelihood improvement in a short or mid-term.</p>	

In practice, the differences between a “large area” or “small area” baseline study are not so relevant within the underlying logical SLA framework, but when it comes to writing terms of reference and even more, writing the report itself. Chapter 8 of the toolkit presents Model Terms of Reference. Most confusion may arise when deciding if certain information belongs to “Description of the Research site”, “Background” or “Data chapters”. A clear understanding of “study area” and “context” will always help to structure the report in a meaningful way.

## CHAPTER 4 CHECKLIST OF CRITICAL ISSUES AND INFORMATION NECESSARY

### 4.1 Introductory Remarks

The purpose of the “checklist of critical issues and information necessary” is to help the researcher identify what data should be collected for baseline or profiling studies that reflect the Yaoundé objectives. The issues included in this checklist are deemed critical and necessary:

- for characterizing artisanal and small-scale mining activities and their developmental role(s) and impact(s) within communities and regions
- for understanding the effects of particular macro-policies on the sub-sector, such as exchange rates, fiscal and budgetary policies and regulations, land right and titling issues
- for describing the flows of resources across sectors and inter-sectoral economic linkages
- for identifying additional opportunities for complementary or alternative livelihood development and for increasing the economic and commercial multiplier effects of this activity
- for understanding the interplay of important cross-cutting themes like HIV/AIDS infection and transmission, environmental degradation and health, gender, child labor, resource conservation across generations, use rights and governance.”

The fundamental assumption, which guides the checklist, is to consider as *critical and necessary* all issues that can be influenced and information that needs to be considered by decision-makers in order to achieve poverty reduction and livelihood improvement in a short or mid-term.

It is also assumed that profiling has a substantially different scope than an in-depth sector analysis. Profiling should provide a quick and standardized outline which as close as possible assembles a specific reality and helps to understand it properly. The Sustainable Livelihoods Framework of the Department for International Development DFID<sup>10</sup> was used to structure necessary information on two layers (Figure 1):

- (a) General issues checklist, characterizing the context of the study area
- (b) Specific issues checklist, characterizing ASM within the study area.

More specifically, the priority-based checklist is designed to collect information on the above mentioned asset pentagon (Human Capital, Social Capital, Natural Capital, Physical Capital, Financial Capital) at both levels, providing:

- (a) at the *general issues* layer a short verbal description of critical issues, and

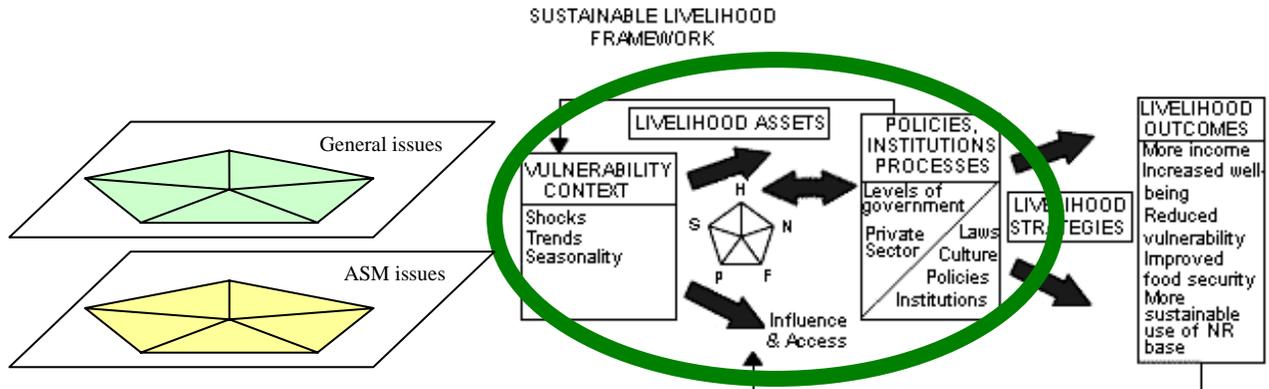
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<sup>10</sup> DFID Department for International Development. Sustainable Livelihoods Guidance Sheets. [http://www.livelihoods.org/info/guidance\\_sheets\\_rtf/Sect2.rtf](http://www.livelihoods.org/info/guidance_sheets_rtf/Sect2.rtf) | download 08/2003.

- (b) at the *ASM issues* layer a breakdown into *assets*, *vulnerabilities* and *structures and processes* in the target ASM community, region, or country.

Reasonable timeframes for profiling are considered between 2 and 4 months, with a workload occupying interdisciplinary teams of between 2 and 4 members. Hence the checklist does not cover all possibly or academically interesting issues and topics, but a *priority based* list of what – in the authors’ opinion – is necessary and critical to know.

Fig. 4.1: Framework for priority based checklist for critical issues and information necessary



## 4.2 Definition of ASM

For proper interpretation of the profiling results, the underlying definition of ASM needs to be clearly defined. Frequently, county-, district- or case-specific definitions might be most appropriate in order to reflect specific conditions.

A historic overview of artisanal mining activity contributes to properly characterizing the activity, as it frequently explains the driving forces (livelihood strategies) and helps correlating the development of ASM-activities (ups and downs) with simultaneous events (reactions to external shocks and stresses, vulnerabilities).

*Checklist items:*

- Definition of ASM used for the purpose of profiling
- Historic overview of ASM in the profiled area

## 4.3 General issues checklist: characterizing the context of the study area

Information about general issues should give an adequate introduction to the profiled area and underlying assumptions, in order to assure proper understanding and interpreting of profiling outcomes. Any study area (country, district) is characterized by its endowment with livelihood assets. This part of profiling should consist mainly of a compilation of existing data.

### 4.3.1 General natural capital

This section comprises a brief description of the study area's endowment with natural resources, like land, water, flora, fauna, etc., in order to assure proper understanding of the situation. A more detailed analysis is necessary for assets that are indispensable for the mining process (e.g. water, land, timber, ...) or that might be adversely affected by ASM (e.g. environmental impact, competing land use, ...); access to these assets should be considered critical<sup>11</sup>.

*Checklist items:*

- Overview of significant (non-mineral) natural resources of the profiled area
- (Non-mineral) natural resources required by ASM
- (Non-mineral) natural resources potentially affected by ASM

### 4.3.2 General human capital

Poverty – apart of economic terms – is characterized by unfulfilled demands regarding health, nutrition, education and other basic needs. Health issues like AIDS are of primary concern in most African countries. Cultural and religious traditions, including gender issues, are important to be known to the extent in which they constitute (at least in the short and mid-term) quite strict borderlines for the achievability of changes.

*Checklist items:*

- Excerpt of relevant statistical data on population, education, health (nutrition, STDs, mortality, ...), etc.
  - Listing of ethnical and religious groups, resuming significant cultural issues and differences
  - Summarized results from existing PRSP baseline studies
- (Note: For all items, gender-disaggregated data if available!)

### 4.3.3 General financial capital

Economic aspects are the driving forces for ASM, independent of being considered a poverty-driven or opportunity driven activity. In order to provide profiling results that specify either of the driving forces, a comparison of the economic conditions in mining communities with the general economic situation of the study area is necessary<sup>12</sup>.

Data that characterize the general economic environment (figures on employment, savings, household income; access to credit, investment, climate) are usually available from national statistics and should be cited for the purpose of comparison between ASM and non-ASM livelihoods. General economic parameters like exchange rate policy, tax

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<sup>11</sup> Mineral resources are to be covered in the “ASM specific issues” section of the checklist.

<sup>12</sup> If the economic situation of ASM-communities is worse than the average situation of the study area (country, district), ASM may be characterized as poverty driven; If the mining communities suffer a less degree of poverty, then the activity may be characterized as opportunity-driven (= an opportunity to escape poverty)

regime or others that might have a direct impact on the cost or revenue of ASM are also critical to know.

*Checklist items:*

- Excerpt of relevant statistical data characterizing microeconomic conditions like household income, cost of living, capacity of saving, etc., using culturally relevant indicators.
- Summary of the relevant macroeconomic framework, like tax regimes, import- export restrictions, investment climate, etc.
- Effects, constraints and opportunities of official exchange rates

#### **4.3.4 General social capital**

It is useful to situate ASM within a broader context of the individual and institutional relations forming the “Social Capital”. The preferred degree of detail to describe a study area’s (e.g. county, district, community) social capital is inversely related to its geographic extension: the smaller the area the more detailed the analysis needs to be. For baseline studies with a national scope, issues like institutional landscape (GO’s, NGO’s, Networks), stakeholder portfolios, and aspects of governance are considered relevant. For baseline studies on community level, insights down to the family level are indispensable in order to develop proposals for improving livelihood strategies.

*Checklist items:*

- Overview of political context, governance, security, justice, human and democratic rights.
- Description of institutional “landscape” and climate of relation between public and private sector
- Description of quality and role of the formal social security system
- Description of traditional hierarchical structures on regional and community level (role of chiefs, ...)
- Description of typical “social contracts” within cultural norms, “regulating” informal property and informal safety nets

#### **4.3.5 General physical capital**

Physical assets (e.g. roads, railways, markets, clinics, schools) should – at the general level – be known mainly in form of nation-wide indicators, in order to establish parameters for comparison with the infrastructural endowment of the ASM-areas to be profiled. Within baseline surveys for profiling ASM-activities, further details at the general level do not appear to be critical.

*Checklist items:*

- Excerpt of relevant statistical data for physical infrastructure in rural areas.

#### 4.4. Specific issues checklist: characterizing artisanal small-scale mining within the study area

##### 4.4.1 Natural capital (ASM)

###### A. Available assets

According to the nature of ASM, mineral resources are usually not explored in categories of reserves. The lack of knowledge of proven or probable reserves makes any mid- or long-term planning extremely difficult. In addition, it increases the investment risk in case of mechanization and reduces chances of loan financing. Rough estimates about probable reserves in the study area, including data on tonnage and grade, can in most cases be obtained by extrapolation of historic production data in combination with geologic interpretation.

*Checklist items:*

- Inventory of mineral resources and types of deposits exploited by ASM (including estimates of extension, tonnage and grade)
- Past, actual and projected future mineral production by ASM, obtained from official statistics and reasonably verified by field observation

###### B. Vulnerabilities

Limited access to formal possession of resources, as well as limited availability of complementary natural assets (e.g. water) required by ASM and resulting conflicts of resource usage within the study area should be analyzed in detail, as these issues result frequently in serious constraints for ASM. While ownership of mineral resources has definitely asset-character for conventional mining, the usual difficulties for ASM to access ownership, require treating this issue as a vulnerability for ASM.

Environmental aspects like the ecological sensitivity of target areas to ASM, as well as existing or potentially produced geohazards should be assessed. Within a profiling study this assessment must not escalate to an extensive EIA, but should allow for a qualitative cost-benefit comparison, based mainly on existing secondary sources of information (inventory of national parks, protected areas, etc.).

*Checklist items:*

- Requirements for obtaining formal access to resources (mining titles, land rights, etc.) and resulting distribution of formal and informal ownership of properties.
- Inventory of existing conflicts of resource usage (conflicts between different segments of mining, conflicts due to environmental concerns, conflicts due to land or water use, ...)
- Environmentally sensitive areas occupied or targeted by ASM and existing geohazards in ASM areas.

### C. Structures and processes

“Structures” determining access to natural capital are on the formal level the mining authorities, complemented by other authorities (environmental authorities, geologic services, etc.) according to national legislation. Simultaneously, the private sector, represented by large mining companies, Chambers of Mines or in some cases NGO’s, may have a substantial influence on national mining policy. Profiling of artisanal mining has to provide necessarily an adequate overview of the institutional framework and the public and private key-stakeholders “governing” the mining sector.

Key issues of mining legislation, as well as adjacent land and water rights (if relevant for formalizing ASM) need to be outlined. As ASM can hardly ever be formalized under the same legal schemes applicable for large scale mining, existing special legal provisions for formalizing ASM should be summarized; also in case that no special provisions exist for ASM, this fact needs to be clearly pointed out. Statistical data like number of licenses granted, percentage of pending licenses, or similar, will provide an idea about the efficiency of the licensing procedures; estimations about the ratio of licensed to unlicensed artisanal miners will provide an idea about how adequate the licensing scheme is for ASM.

Aside of the legal requirements for formal ASM, even informal mining usually has to comply with a significant set of rules, involving the approval of the mining activity by the land owner, the local chief or the community; distribution of benefits, etc. Knowledge of these cultural norms and practices is imperative: large scale mining operations sometimes count with financial resources to enforce their position against the will of the local community, while ASM depends entirely on good relations and therefore compatibility with local cultural norms. This set of cultural rules needs to be identified during profiling, as it constitutes not only the condition under which informal ASM operates, but a complementary framework for any potentially feasible ASM-legislation and formalization efforts.

*Checklist items:*

*Transforming structures (public and private sector institutions)*

- Mining authorities, Geologic services, Environmental authorities
- Key-stakeholders of the private sector (Mining companies, Chambers of Mines, NGOs, etc.)

*Formal Processes (policies, legislations)*

- Mining rights, Land rights, Water rights, Indigenous rights
- Titling issues, legal status of ASM (Number of licensed operations by type, Number of pending licenses, Estimated number of unlicensed mines/miners)

*Informal Processes (rules, culture, relations)*

- Cultural rules, norms and practices determining the “approval” of ASM activities by local communities and consensual access to the deposit.
- Political and cultural factors determining access to and power over natural capital, including inequality based on gender, wealth, and ethnicity.

#### 4.4.2 Human capital (ASM)

Artisanal miners usually require a broad spectrum of skills, controlling a complex production process (geology, mining, processing, marketing) at a technological level according to their possibilities.

##### A. Available assets

Data on sanitary situation, nutrition, health and educational services available in the ASM areas should be obtainable from national, departmental or local statistics. Local hospitals, sanitary posts or schools are usually willing to share their information. The information is relevant in order to compare the conditions for the development of human capital in ASM areas with conditions in similar non-mining rural areas.

Access to information is another issue building human capital. Opportunities to access information in ASM areas are usually limited, in a similar or even worse way than in other rural areas. The identification of existing information channels within a profiling study will allow for later decisions on how to make training or capacity building most efficient.

##### *Checklist items*

- Population involved in ASM and their idiosyncrasies; Break down of information (per age, gender, regions, mines); Origin of population (local or migration), Socio-economic-cultural stratification according to level of participation; Skills, knowledge and experiences; correlation with technical level and/or economic level (business skills) of operations or communities
- Compilation of statistics and registers describing health conditions, nutrition standards, educational opportunities (availability of primary, secondary education) in the ASM communities.
- Access to further capacity-building information: general and ASM-specific information (training materials, commodity prices)
- Rules of access to human capital resources based on gender, age, wealth, or other characteristics

##### B. Vulnerabilities

Occupational and environmental risks of artisanal mining may jeopardize the health of the miners, their families and even adjacent communities. Extensive screening or sampling campaigns exceed the scope of profiling; proper identification of existing risks nevertheless is necessary.

Human capital is most at risk, when affecting children and future generations. Specific conditions of health and educational issues of children need to be highlighted. Within this context, child labor is a very relevant issue, as it might jeopardize the health of the involved children as well as their ability to attend school on a regular basis. Child labor issues have to be profiled very carefully in order to avoid any misinterpretation between non-acceptable *real child labor*, and acceptable participation in *family based ASM*.

STD's (sexually transmitted diseases), and especially HIV/AIDS, may be relevant issues in ASM communities, particularly in case of boom-type ASM operations where miners live during weeks or months separated from their families. Hence, the question if AIDS is an ASM-specific issue or not, has to be answered on a case-to-case basis.

*Checklist items:*

- Specific occupational and environmental health risks of ASM
- Health, educational and nutritional situation for children; incidence and character of child labor: physiological issues, health hazards of child labor, educational issues
- Possible correlation between incidence of AIDS and ASM specific conditions (percentage of HIV infected people reported higher or lower than in national average?)
- Identification of the most vulnerable groups in ASM communities



*Columbite miners, Nigeria*

### **C. Structures and processes**

Formal structures supporting the creation and maintenance of human capital are educational and healthcare facilities. The usual deficiencies of public healthcare, education and social security are frequently compensated by creative and innovative mechanisms of self-help, usually based on traditional distribution of responsibilities. A complete analysis of existing relations might exceed the scope of ASM-profiling; ASM-case-specific self-help practices (e.g. teachers contracted by ASM-communities, medical assistance to mine-workers paid by mine-shareholders, community activities, etc.) should be highlighted, as they have an inherent potential to be replicated in other communities.

Aspects of leadership, according to the results of the profiling workshop during the CASM-meeting 2003 seem to have inferior importance in African ASM; probably due to traditional and predominantly hereditary forms of leadership (chiefs). Leaders – without regard of being traditional or elected – need to be identified during profiling, as subsequent implementation of programs will be in emerging need of interlocutors.

*Checklist items:*

*Transforming structures (public and private sector institutions)*

- Health care facilities in ASM communities (public, private and traditional health care) (quality, quantity, roles, accessibility)
- Educational (schools) and training facilities

*Formal Processes (policies, legislations)*

- Access to public healthcare, education, social security for ASM miners and their families

*Informal Processes (rules, culture, relations)*

- Self-help activities and practices
- Personal capacity building, forms of leadership, list of identified leaders

#### **4.4.3 Financial capital (ASM)**

While generating products of high intrinsic value, like gold, diamonds and gemstones, artisanal miners and their families are typically poor. The fact that ASM is not frequently taken into account in national Poverty Reduction Strategies or portfolios of Development Agencies, underlines the common misunderstanding of basic ASM-economics.



*Barite miners, Nigeria*

## A. Available assets

ASM constitutes an opportunity for the poor for income and employment generation, producing more or less regular inflows of money and in consequence, financial capital. Surplus income or savings are frequently not invested in the mine but in other sectors (real estate, construction in nearby cities, agriculture, livestock, etc.).

Assessment of financial assets created by ASM needs to be done from bottom up whenever possible, estimating production costs and revenues on an individual basis (“typical miner’s household income”), and estimating consolidated income generation for communities, districts and up to national level. The result may differ significantly from official production or export statistics, according to the impact of smuggling on national statistics. ASM-profiling should reveal how the income generated by ASM contributes to poverty reduction and to what extent the circulating money stimulates local economies.

Taxation issues frequently brought up when discussing informal ASM are far less relevant than generally assumed. In practice, tax income from formal ASM might be even inferior to informal ASM, as formal miners are able to recover paid VAT (value added tax).

### *Checklist items:*

- Employment opportunities provided by ASM and economically linked activities (transport, workshops, merchants, shops, gem cutting, etc)
- Income generation from ASM [desegregation as far as possible: at national level (relevance of ASM for foreign export balance and GDP), district -, local and individual level (typical household income)]
- Identification of cross-sector effects and flows of economic resources across sectors; Quantification of inter-sectoral upstream linkages with local providers of goods and services and local development role of ASM, downstream linkages with manufacturing based on domestic minerals, creating aggregate value

## B. Vulnerabilities

Depending on the local situation, ASM may require investment surpassing the individual miner’s capacity. While this limitation can be partially overcome by creation of associations, cooperatives, etc., at a certain moment access to (formal or informal) credit may become critical and constitute one of ASMs key-vulnerabilities, leading to dependencies and even involuntary linkage to criminal activities.

Commodity prices in the ASM areas are necessarily and inherently lower than on the world market, as intermediary traders need to cover their costs, risks and profits. Cases where the price-difference exceeds reasonable trading margins should be highlighted in profiling studies, independent of the potential origin (excessive profits or regulated market).

Checklist items:

- Access to credit and dependencies from private creditors and money lenders; sometimes related with ownership of production facilities (equipment owner as “investor”)
- Arbitrariness of prices for products, lacking market information systems or competitive buyers.
- Linkages with criminal activities: Drug traffic, weapon traffic, money laundering, smuggling

### C. Structures and processes

While the official financial sector (banks) traditionally ignores ASM (specific credit lines for ASM exist only in exceptional cases), sources for financing ASM can predominantly be found by investors of the private sector. Besides of private creditors and money lenders already mentioned in section B above, mineral buyers and buyers’ organizations (sometimes even governmental) may play an important role. ASM profiling should enumerate and attempt to quantify the sources of financing.

The role and attitude of fiscal authorities towards ASM needs to be briefly characterized, especially when it can be reasonably assumed that fiscal considerations are actively promoting informality (excessive taxes; elevated royalties, market regulations, etc.).

The relation between ASM and the official financial sector (banks) happens to be frequently a mutual one: If banks don’t trust artisanal miners, artisanal miners don’t trust banks. In consequence miners might be looking for traditional alternatives for the use of surplus income or savings. Acquisition of real estate properties (land, houses), investment in agriculture or livestock, or even in consumer goods and social prestige might be the most frequently chosen options. Visible proxy-indicators might be needed (like investment in social prestige).

*Checklist items:*

*Transforming structures (public and private sector institutions)*

- Official credit lines for ASM, Mineral buyers, buyers organizations, money lenders
- Fiscal authorities and market regulations

*Formal Processes (policies, legislations)*

- Linkages between fiscal policies and ASM: Direct taxes, fees and royalties, Indirect taxes, Sanctions in case of tax evasion, Benefits in case of compliance

*Informal Processes (rules, culture, relations)*

- Use of surplus income, alternative and traditional options for savings
- Presence or absence of a culture of re-investment in the mine

#### 4.4.4 Social capital (ASM)

Social resources include social support networks; cooperative work; membership of more formalized groups; and relationships of trust, reciprocity and exchanges. A strong social capital basis facilitates co-operation, reduces daily life expenses (in money, time, or kind), and provides the basis for informal safety nets amongst the poor.

## A. Available assets

Accumulation of social capital assets in form of organization is of vital importance for the ASM sector, and consequently in-depth knowledge about existing organizational forms, roles and mechanisms of interaction is critical. Existing organizations can be divided into (i) groups related to community activities and administrating the physical capital of the community, (ii) work related groups organizing the use of natural capital (in case of ASM: the mineral deposit), and (iii) groups administrating financial capital (savings and credit groups). Profiling work should also evaluate the legitimacy and representation of existing formal organizations, and explore other existing informal organizational forms. This knowledge is critical and necessary, as these structures will become either partners or opponents of any intervention oriented towards ASM.

Typical organizational forms on the micro-level, defining the distribution of roles and income within the family context of ASM, as well as organizational structures of self-employment schemes are also desirable to be known. Traditional relations within and between families constitute basic building blocks for higher-level organizations. Furthermore, any potential external intervention (project) will cause intentional or involuntary modifications of the intra-family distribution of work and income. For example, mechanization of ASM mineral processing operations, in order to increase productivity, may cause women to loose their income opportunity. If the family budget for food and education depends on the women's "pocket", a well-intentioned effort may backfire.

### *Checklist items:*

- Existing organizational structures of ASM and their legitimacy or representation structures which might become stakeholders in ASM related programs; Discussion of their relevance at different levels (community-level, "second floor" Chamber-type umbrella organizations); including informal organizations.
- Internal micro-level organization schemes: Community and family context of ASM, gender roles within and related to ASM; Self-employment schemes (Ad-hoc groups, Cooperatives, Collectively or community owned firms) and Employer-employee schemes (Single-proprietorship firms, Corporations)

## B. Vulnerabilities

Individualism and distrust usually characterizes ASM, especially in case of high-intrinsic-value minerals (gold, gemstones). These attitudes are obstructing organization, and constitute a complementary potential of conflicts, and thus form a major vulnerability for the sector. In case of disputes between ASM groups and mining firms, the lack of organization affects both parties: the artisanal miners are unable to articulate, and the mining firms lack a legitimate counterpart to negotiate.

Migration issues related to ASM need to be profiled, according to their significance in the target area. While ASM has the potential to avoid migration from rural to urban areas,

spontaneous massive migrations following mineral discoveries frequently disrupt existing local communities, or create new “boom-towns” which may conflict with adjacent traditional communities. The history and frequency of such ASM-induced migrations needs to be included in profiling studies.

Lack of social capital in form of legitimate organizations furthermore affects the miner’s potential to negotiate their interests with local or central governments.

*Checklist items:*

- Inventory of existing conflicts (between rivaling ASM-groups, between miners and local communities, between ASM-miners and mining firms, etc)
- Migration issues: Positive effect: Avoiding migration (Providing employment in rural areas); Negative effects: Promoting migration towards “boom towns”, disrupting local organization processes
- Effectiveness of miners associations in representing ASM interests at government level

### **C. Structures and processes**

The discussion of structures and processes related to social capital should focus of institutions in need, open or interested to communicate or cooperate with an organized ASM sector. This analysis may lead to a list of authorities, institutions and allies, eventually even more significant for the development of sustainable ASM livelihoods, than the usual list of stakeholders related to the mining sector.

The legal and institutional framework of a country has a significant influence on organization processes and in consequence on governance relying on public participation. The concordance of typical social contracts within the ASM sector with the existing legislation defines in last instance the possibility or impossibility of formalization of ASM, as the social contracts reflect the acceptance of legislation by the society within existing cultural norms and practices.

Social Capital creates safety nets. Safety nets are needed to make livelihoods sustainable. The prevailing nature of formal or informal safety nets needs therefore to be profiled.

*Checklist items:*

*Transforming structures (public and private non-sector institutions)*

- Analysis of public and private institutions (others than the sector related institutions analyzed in Natural Capital) interested in promoting an organized ASM sector
- Applicability of existing PRSP’s to the ASM sector

*Formal Processes (policies, legislations)*

- Analysis if existing legislation promotes or obstructs the conformation of ASM organizations
- Access of ASM to formal safety nets and social services

*Informal Processes (rules, culture, relations)*

- Role and importance of informal safety nets, self-help initiatives, etc.

#### 4.4.5 Physical capital (ASM)

##### A. Available assets

Mining, even at an artisanal level, requires considerable investment; this comprises not only mining equipment but also investment in development of the mine. It is a technical process that requires the use of simple tools or more sophisticated machinery, according to the deposit to be mined. Profiling work must give a clear overview of applied technology and especially their appropriateness. The later needs to be analyzed with extreme care: “inappropriateness” of the technology must not be diagnosed unless the evaluating technical professionals are able to propose better alternatives which can be implemented under the existing financial constraints of ASM, and with at least equal economic results.

The endowment of mining communities with public physical assets (roads, schools, medical facilities, ...) in comparison to non-mining communities reflects governmental attitude towards ASM. A characterization of the typical housing of miner’s families allows for an appreciation of average personal physical capital and living conditions. Besides of contributing to better understanding of the conditions of life, housing quality frequently correlates with permanent or temporary nature of ASM.

##### *Checklist items:*

- Technology used in ASM and degree of mechanization, including assessment of suitability in terms of productivity and mineral recovery
- Average and minimum investment required for a typical production unit to improve productivity and mineral recovery
- Endowment of ASM communities with public infrastructure (roads, schools, medical facilities, drinking water, waste management, communication...); typical contribution of ASM to creation and maintenance of the infrastructure
- Typical housing of miner’s families (correlation between quality of houses and age or time-horizon of ASM activity indicating permanent or temporary nature of ASM)



*Washing gold, Nigeria*

## B. Vulnerabilities

In case of proofed technological “inappropriateness” the main vulnerability consists in deficient access to information about technological alternatives, which might be related to human capital (educational issues). Otherwise, low technological standards may be more related to financial capital (lack of access to financing or credit), or natural capital (ownership of mineral resources, uncertainty of investment due to titling issues), etc. These issues and interferences might need to be clarified during profiling work.

Other frequent vulnerabilities are related with maintenance of public infrastructure and continuity of services. As these are unfortunately common vulnerabilities in rural areas, what interests most in the context of ASM profiling, is the existence of eventual differences between ASM and non-ASM communities with regard to quality of services.

*Checklist items:*

- Reasons for “inappropriateness” of mining technology
- Continuity or discontinuity of services, vulnerability due to seasonal changes (transport during rainy season, water supply during dry season...)
- Proximity and access to basic services (health, schools, ...)
- Quality of services, responsibilities for maintenance



*Young barite miner, Nigeria*

### C. Structures and processes

Structures with a capacity to improve mining related physical capital are generally related to access to financing, which should be discussed in the corresponding financial capital section. A possible exception is the existence of specific investment promotion programs (e.g. machinery pools) which – in this case – should be included under physical capital.

Adoption of alternate technologies, nevertheless, not only depends on rational or economic considerations. Cultural attitudes towards changes or innovations may constitute barriers difficult to break, and should be explored carefully. This aspect may be specially relevant with regard to mechanization in order to increase productivity, as mechanization usually alters the traditional distribution of benefits among social or gender groups, or may – in case of accelerated depletion of the deposit – even alter resource usage among generations.

Given the nature of ASM as economic activity in rural areas and ASM's importance for local economies, improved infrastructure may result from progress towards decentralization. An overview of authorities on different governmental levels will help to identify critical bottlenecks. The analysis should not only cover the administrative competences and processes at different levels, but also the degree of compliance with the official duties.

The endowment of a community with public infrastructure depends not only on the public sector. Initiative of self-construction and/or the community's participation in public works is frequently required to "speed up" the process. Profiling should determine if this is the case in ASM communities, and how the initiatives of ASM communities compare to non-ASM communities. Similar to this issue, the culture of maintenance of public infrastructure by the community determines the quality of services.

*Checklist items:*

*Transforming structures (public and private sector institutions)*

- Existence of investment promotion programs (instruments for financing ASM equipment)
- Authorities on national, district and local level, in charge of basic infrastructure,

*Formal Processes (policies, legislations)*

- Procedures for solicitation of public physical infrastructure, compliance of public officers with their duties (according to scope of ASM profiling).

*Informal Processes (rules, culture, relations)*

- Attitudes towards technological changes or innovations
- Critical analysis of benefits of technological changes (benefited and affected groups)
- Culture of self-construction and appropriation of local public infrastructure by local population (user's responsibility for maintenance)

## **CHAPTER 5**

### **BENCHMARK INDICATORS**

#### **5.1 Selection criteria**

The second set of tools pertains to benchmark indicators. An indicator is a relatively simple measure to characterize a more complex concept or situation, which allows for comparison across time and space. Indicators have to provide information on the state of a system and its change over time. They are the yardsticks to measure performance and progress.

Indicators are useful when a concept is multi-faceted or difficult to quantify. An example of a multi-faceted concept is health, which includes the physical strength to perform daily life activities, resistance to disease, having strong teeth, and being well nourished, among other things. We may observe that person A looks healthier than person B, but it is difficult to say that person A is five times more healthy than person B. By asking people about the number of lost work days due to illness over a certain period, and by measuring their Body-Mass Index ( $\text{Weight}/\text{Height}^2$ ), we obtain a more objective and systematic indication of relative health. It is advisable to use multiple indicators to measure one concept.

Good benchmark indicators

- are measurable with reasonable effort in terms of costs, time and skills required;
- are repeatable over time;
- can be generalized across a certain space – depending on the objective this space can be one village or a region;
- measure the target concept;
- are pertinent, relevant to the community and culturally appropriate;
- are quantifiable or allow for weighting;
- are verifiable and consistent (different researchers should obtain a similar value for the same indicator at a specific time and location);
- must be clearly defined in terms of their purpose, underlying assumptions and limitations.

The present indicators were selected on the basis of their ability to directly or indirectly measure poverty and livelihood in ASM communities. In addition, we included indicators that capture the causes of poverty. For example, both productivity and mineral recovery are essential variables, affecting revenue, cost and income, the key driver in breaking the vicious circle of poverty.

In line with the sustainable livelihood approach, the set of benchmark indicators is structured according to the asset pentagon. For each of the capital categories, indicators are provided at the national level and the community level. Most of the national level indicators used are routinely collected and published by the World Bank in the annual volumes of World Development Indicators and in United Nations statistics, and can, therefore, be obtained with little effort.

The community level refers primarily to ASM communities, although for comparative purposes non-ASM communities can be included. Apart from national level and community level indicators, a set of specific indicators related to the ASM operation level will be included.

In order to ensure the use of a standardized mode of data collection in field surveys and the comparability of information across ASM districts, communities and countries, definitions of the indicators used are included in ANNEX I.

## 5.2 Sustainable Livelihood indicators

### 5.2.1 Natural capital

Table 5.1. summarizes the natural capital indicators considered important in profiling work. At the national and community level natural resource endowment is measured in terms of the percentage of arable land, cropland and forests, and the availability of freshwater resources. The rate of the average annual deforestation, as well as biodiversity indicators, such as the number of species of higher plants, mammals and birds, can be used to judge the conservation of natural assets. The annual rate of deforestation caused by population growth is high in a number of low-income African countries, ranging from 1 % to 3 % and more. Rapid deforestation can lead to soil erosion and a loss of natural biodiversity.

*Table 5.1: Natural capital indicators*

National level	Community level
Land use <ul style="list-style-type: none"> <li>• Arable land [% of land area]</li> <li>• Permanent cropland [% of land area]</li> </ul>	Land use <ul style="list-style-type: none"> <li>• Arable land [% of land area]</li> <li>• Permanent cropland [% of land area]</li> </ul>
Water <ul style="list-style-type: none"> <li>• Total freshwater resources [m<sup>3</sup>/capita]</li> </ul>	Water <ul style="list-style-type: none"> <li>• Total freshwater resources [m<sup>3</sup>/capita]</li> </ul>
Forests and Flora <ul style="list-style-type: none"> <li>• Forest area [% of total land area]</li> <li>• Average annual deforestation [%]</li> <li>• Higher plants species [number]</li> </ul>	Forests and Flora <ul style="list-style-type: none"> <li>• Forest area [% of total land area]</li> <li>• Average annual deforestation [%]</li> <li>• Higher plants species [number]</li> </ul>
Fauna <ul style="list-style-type: none"> <li>• Mammals species [number]</li> <li>• Birds species [number]</li> </ul>	Fauna <ul style="list-style-type: none"> <li>• Mammals species [number]</li> <li>• Birds species [number]</li> </ul>
	Household ownership of land <ul style="list-style-type: none"> <li>• Share of households owning land [%]</li> <li>• Average size of land owned [ha/household]</li> </ul>

For rural households land is the most important asset. Land used for food production can significantly reduce the vulnerability of the owner in cases of external shocks, such as loss of employment. Information on the ownership of land, including the size of the land owned is, therefore, essential in assessing livelihoods of rural communities. Mineral

reserves, the most important natural asset of the extractive sector, will be included in the set of indicators to be monitored at the ASM operation level.

### 5.2.2 Human capital

The most significant human assets are skills and knowledge acquired through education, and good health. Related indicators are presented in Table 5.2. While the number of physicians per 1,000 people describes the availability of health services, the remaining health indicators provide information on the state of the health of the population. A particularly important indicator of extreme poverty is prevalence of child malnutrition. Chronic undernourishment is at the beginning of a vicious cycle of ill health, reduced learning capacity and poor physical growth.

*Table 5.2: Human capital indicators*

National level	Community level
<p>Population</p> <ul style="list-style-type: none"> <li>• Total population [millions]</li> <li>• Females as percentage of labor force [%]</li> <li>• Children 10-14 in labor force [% of age group]</li> </ul> <p>Health</p> <ul style="list-style-type: none"> <li>• Physicians [per 1,000 people]</li> <li>• Life expectancy at birth [years]</li> <li>• Under-five mortality rate [per 1,000]</li> <li>• Prevalence of child malnutrition [% of children under 5]</li> <li>• Prevalence of HIV [% of adults] <ul style="list-style-type: none"> <li>○ Male</li> <li>○ Female</li> </ul> </li> </ul> <p>Education</p> <ul style="list-style-type: none"> <li>• Adult illiteracy rate [% ages 15 and over] <ul style="list-style-type: none"> <li>○ Male</li> <li>○ Female</li> </ul> </li> <li>• Primary completion rate [% of all children who complete primary school] <ul style="list-style-type: none"> <li>○ Male</li> <li>○ Female</li> </ul> </li> <li>• Average years of schooling <ul style="list-style-type: none"> <li>○ Male</li> <li>○ Female</li> </ul> </li> </ul>	<p>Population and labor force</p> <ul style="list-style-type: none"> <li>• Total population of target area</li> <li>• ASM population in target area</li> <li>• Share of ASM population in target area [%]</li> <li>• Share of migrants in ASM population [%]</li> <li>• Females as percentage of labor force [%]</li> <li>• Children 10-14 in labor force [% of age group]</li> <li>• Children &lt; 10 in labor force [% of age group]</li> </ul> <p>Health</p> <ul style="list-style-type: none"> <li>• Physicians [per 1,000 people]</li> <li>• Life expectancy at birth [years]</li> <li>• Under-five mortality rate [per 1,000]</li> <li>• Prevalence of child malnutrition [% of children under 5]</li> <li>• Prevalence of HIV [% of adults] <ul style="list-style-type: none"> <li>○ Male</li> <li>○ Female</li> </ul> </li> </ul> <p>Education [male, female]</p> <ul style="list-style-type: none"> <li>• Adult illiteracy rate [% ages 15 and over]</li> <li>• Primary completion rate [% of all children who complete primary school]</li> <li>• Average years of schooling</li> </ul>

Because education improves people's ability to break out of the cycle of poverty, indicators of education efficiency and outcomes, such as adult illiteracy rate, primary completion rate and average years of schooling are important. Moreover, population data are added to quantify the size of the human assets available at the national and community level, including data on women and children in the labor force.

### 5.2.3 Financial capital

Financial capital comprises earned income and accumulated savings in cash, bank deposits or other liquid assets, and goods such as cattle or jewelry. Financial resources are particularly important as they allow the most direct and immediate achievement of livelihood outcomes, such as the purchase of food or other basic consumer goods.

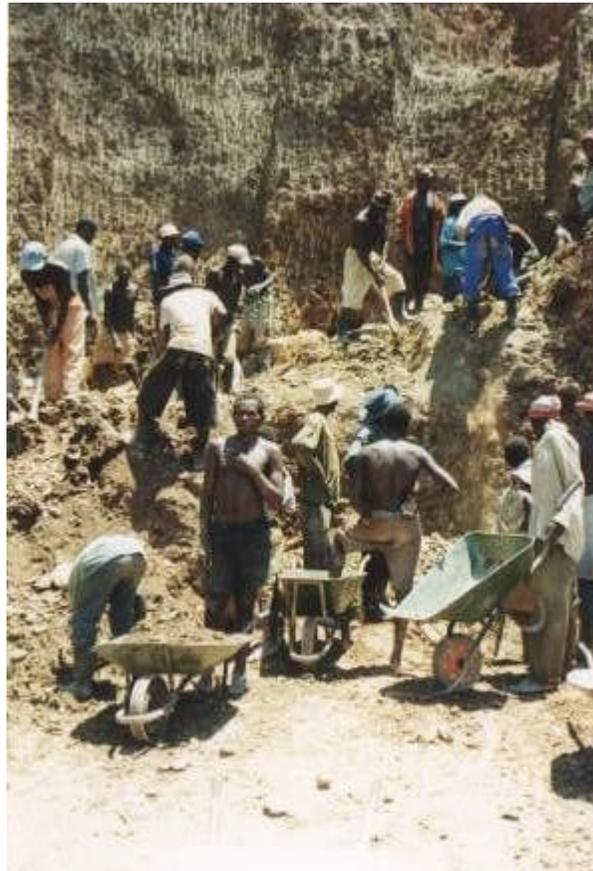
Financial capital indicators proposed for baseline surveys are reported in Table 5.3. At the national level the principal indicators which describe the extent of poverty and thus the lack of financial assets should be applied, including the rural and urban poverty rate, as well as population below 1\$ and 2\$ a day. Gross national income per capita and PPP gross national income per capita are important measures of economic performance and overall productivity. Interest rates provide information on potential income from cash savings and the cost of loans.

*Table 5.3: Financial capital indicators*

National level	Community level
Poverty <ul style="list-style-type: none"> <li>• Rural poverty rate [%]</li> <li>• Urban poverty rate [%]</li> <li>• Population below 1\$ a day [%]</li> <li>• Population below 2\$ a day [%]</li> </ul> Income <ul style="list-style-type: none"> <li>• Gross national income per capita [US\$]</li> <li>• PPP gross national income per capita [US\$]</li> </ul> Interest rates <ul style="list-style-type: none"> <li>• Deposit [%]</li> <li>• Lending [%]</li> </ul>	Income <ul style="list-style-type: none"> <li>• Average household cash income from paid work [US\$/month or year]</li> <li>• Average household non-cash income from food production [US\$/month or year]</li> <li>• Number of persons per household</li> <li>• Total average income per person [US\$/person/year]</li> </ul> Expenditures <ul style="list-style-type: none"> <li>• Average household cash expenditures for food [US\$/month or year]</li> <li>• Average household cash expenditures for non-food [US\$/month or year]</li> <li>• Total average household cash expenditures [US\$/month or year]</li> <li>• Share of cash food budget in household income [%]</li> </ul> Savings <ul style="list-style-type: none"> <li>• Share of households owning savings in cash assets [%]</li> <li>• Value of savings in culturally relevant assets (e.g. cattle, jewelry)</li> <li>• Household savings rate [%]</li> </ul>

At the community level important financial capital indicators are average household income and average cash household expenditures per period. A powerful measure in assessing the vulnerability of a household is the share of the cash food budget in household income. A high share of, for example, 70 % indicates that little money is left for other needs, such as health, education, transport and other services, and that this household is highly vulnerable. Additional measures of financial capital at this level are the share of households with savings in cash assets and the household savings rate.

A word of caution; we have repetitively found that reliable and accurate household income and expenditure data are difficult to obtain. Household incomes of poor rural families are typically *unrecorded*. They also tend to be *variable* and *intermittent*, or changing from day to day with undefined periods with and without, income. A certain share of income may be from subsistence production (e.g. home-grown vegetables) rather than money, which is difficult to quantify. And they often come from *various* different sources in different currencies. Consequently few people will be able to answer the question: “How much did you earn this year?” In this situation the researchers may choose to use proxies for relative income and wealth, such as the ownership of certain assets or the value of contributions to (religious) ceremonies.



*Quarry miners, Mozambique*

#### **5.2.4 Social capital**

Social capital indicators recommended for baseline work are reported in Table 3.4. Both for individuals and households social assets primarily mean the membership in a formal social security system or in a social network at the community level. Measures like public expenditures on pensions and on health provide information on the extent of the social security net at the national level. While in many high income countries public expenditures on pensions exceed 10 % of GDP, this share is less than 1 % in most African countries.

Table 5.4: Social capital indicators

National level	Community level
<p>Social security</p> <ul style="list-style-type: none"> <li>• Public expenditures on pensions [% of GDP]</li> <li>• Average pension [% of per capita income]</li> <li>• Public expenditures on health [% of GDP]</li> </ul> <p>Public safety</p> <ul style="list-style-type: none"> <li>• Violent offenses [number per year per 100,000 population]</li> <li>• Property-related offenses [number per year per 100,000 population]</li> </ul>	<p>Social security</p> <p>Participation in formal safety net</p> <ul style="list-style-type: none"> <li>• People with health insurance [%]</li> <li>• People entitled to unemployment benefits [%]</li> <li>• People entitled to receive pensions [%]</li> <li>• Average pension [% of per capita income]</li> </ul> <p>Social networks</p> <p>Share of people with links to</p> <ul style="list-style-type: none"> <li>• Occupation-based associations [%]</li> <li>• Community-based social assistance groups [%]</li> <li>• Informal savings and credit groups [%]</li> </ul> <p>Public safety</p> <ul style="list-style-type: none"> <li>• Violent offenses [number per year per 100,000 population]</li> <li>• Property-related offenses [number per year per 100,000 population]</li> </ul>

At the community level, indicators on the participation of people in the social security system and in occupation-based associations or community-based social assistance groups are used to measure social assets. The number of violent offenses and property-related offenses should be included to enable the assessment of public safety.

Data on female and children participation in the labor force should be collected to describe the situation of social groups that are usually the most vulnerable in the society. In many of the low income economies between 20 % and 40 % of children in the age group 10 to 14 have to work, thereby missing valuable years of education. These are included in the human capital category.

### 5.3.5 Physical capital

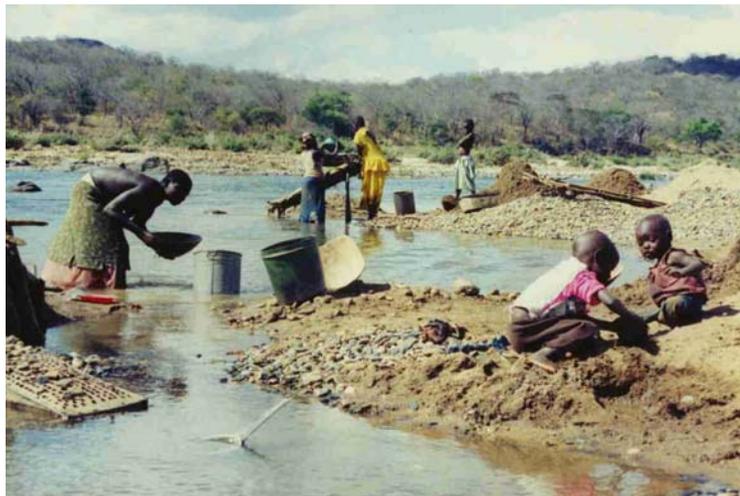
Physical capital indicators to be applied in profiling work are compiled in Table 5.5. Both at the national and the community level, the number of hospital beds and the percentage of the population with access to improved water source and to improved sanitation facilities are included to measure the availability of basic infrastructure. At the national level, the share of households with access to potable water, with sewerage connection with electricity and telephone, as well as data on the number of passenger cars, two-wheelers, radios and television sets are used as additional indicators of infrastructural development.

Similarly, at the community level information is required on the share of households owning a home, the size of the home, availability of piped water, sewerage connection,

electricity and telephone. In addition, data on the ownership of transport vehicles and consumer durables, such as radios, television sets, and refrigerators, are indicative of the availability of physical assets at this level and should, therefore, be recorded.

*Table 5.5: Physical capital indicators*

National level	Community level
<p>Population access to services</p> <ul style="list-style-type: none"> <li>• Hospital beds [per 1,000 people]</li> <li>• Access to improved water source [% of population]</li> <li>• Access to improved sanitation facilities [% of population]</li> </ul> <p>Households with access to services</p> <ul style="list-style-type: none"> <li>• Access to potable water [%]</li> <li>• Sewerage connection [%]</li> <li>• Electricity [%]</li> <li>• Telephone [%]</li> </ul> <p>Transport and information assets</p> <ul style="list-style-type: none"> <li>• Passenger cars [per 1,000 people]</li> <li>• Two-wheelers [per 1,000 people]</li> <li>• Radios [per 1,000 people]</li> <li>• Television [per 1,000 people]</li> </ul>	<p>Population access to services</p> <ul style="list-style-type: none"> <li>• Hospital beds [per 1,000 people]</li> <li>• Access to improved water source [% of population]</li> <li>• Access to improved sanitation facilities [% of population]</li> </ul> <p>Ownership of assets:</p> <ul style="list-style-type: none"> <li>• Share of households owning home [%] <ul style="list-style-type: none"> <li>○ Average size of home [m<sup>2</sup>]</li> <li>○ With piped water in house [%]</li> <li>○ With sewerage connection [%]</li> <li>○ With electricity [%]</li> <li>○ With telephone [%]</li> </ul> </li> <li>• Share of households owning <ul style="list-style-type: none"> <li>○ Passenger cars [%]</li> <li>○ Two-wheelers [%]</li> <li>○ Motor boat [%]</li> </ul> </li> <li>• Share of households owning <ul style="list-style-type: none"> <li>○ Radio [%]</li> <li>○ Television [%]</li> <li>○ Refrigerator [%]</li> </ul> </li> </ul>



*Women gold panners, Zimbabwe*

### 5.3 ASM operation level indicators

At the ASM operation level, a number of indicators on the sub-sector structure and on institutional performance are included in addition to those related to the asset pentagon of natural, human, financial social, and physical capital. Indicators at this level recommended for profiling studies are presented in Table 5.6.

Table 5.6: ASM operation level indicators

<p>ASM sub-sector size and structure</p> <ul style="list-style-type: none"> <li>• Mineral production by ASM [time-series]</li> <li>• Total production units in target area</li> <li>• Average number of workers per production unit [number]</li> <li>• Share of production units organized as             <ul style="list-style-type: none"> <li>○ Ad hoc groups [%]</li> <li>○ Single proprietorship firms [%]</li> <li>○ Co-operatives [%]</li> <li>○ Partnerships [%]</li> </ul> </li> </ul> <p>Institutional performance</p> <ul style="list-style-type: none"> <li>• Average duration of licensing process [weeks]</li> <li>• Licensing costs [US\$/licence]</li> <li>• Number of pending licence applications</li> <li>• Mine site inspections [number/year]</li> <li>• Number of conflicts between [per year]             <ul style="list-style-type: none"> <li>○ ASM and large-scale mines</li> <li>○ ASM and communities</li> </ul> </li> </ul> <p><i>Natural assets</i></p> <p>Mining rights:</p> <ul style="list-style-type: none"> <li>• Share of production units with mining licence [%]</li> <li>• Share of production units with proved mineral reserves [%]</li> </ul> <p>Environmental effects:</p> <ul style="list-style-type: none"> <li>• Area affected by ASM in target area [hectares]</li> <li>• Annual land degradation by ASM [hectares/year]</li> <li>• Annual land rehabilitation by ASM [hectares/year]</li> <li>• Use of mercury in ASM [kg/year]</li> </ul>	<p><i>Human capital</i></p> <p>Health:</p> <ul style="list-style-type: none"> <li>• Lost workdays of ASM due to illness [days]</li> <li>• Lost days of other ASM household members due to own or child illness [days]</li> </ul> <p>Mine safety:</p> <ul style="list-style-type: none"> <li>• Protective equipment [US\$ book value/production unit]</li> <li>• Number of lethal accidents [per ASM district]</li> <li>• Lost workdays due to mine accidents [days/year/capita]</li> </ul> <p><i>Financial capital</i></p> <p>Income</p> <ul style="list-style-type: none"> <li>• Average income from mining [US\$/month or year]             <ul style="list-style-type: none"> <li>○ Mine worker</li> <li>○ Gang leader / shift boss</li> <li>○ Licence holder</li> <li>○ Property owner</li> </ul> </li> </ul> <p>Access to credit</p> <ul style="list-style-type: none"> <li>• Share of production units with bank loan [%]</li> </ul> <p><i>Social capital</i></p> <ul style="list-style-type: none"> <li>• Share of miners with membership in ASM association [%]</li> <li>• Share of miners with membership in labor union [%]</li> </ul> <p><i>Physical capital</i></p> <p>Mine assets owned per production unit:</p> <ul style="list-style-type: none"> <li>• Mining equipment [US\$ per production unit]</li> <li>• Processing equipment [US\$ per production unit]</li> <li>• Transport equipment [US\$ per production unit]</li> </ul> <p>Operational efficiency:</p> <ul style="list-style-type: none"> <li>• Labor productivity [units product/day worked]</li> <li>• Mineral recovery [%]</li> </ul>
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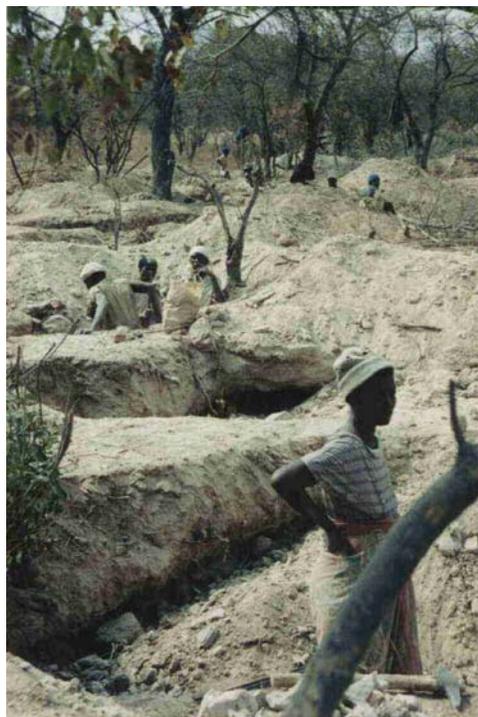
Mineral production by ASM, total number of production units, average number of workers per unit and shares of different types of organizations are used to portray the size and structure of the ASM sub-sector to be profiled. Data on the duration of the licensing process, on licensing costs, the number of pending licenses, the number of mine site

inspections and the incidence of conflicts between ASM and large-scale mines or communities provide evidence of the effectiveness of the mining authority responsible to control and support the activity.

Indicators of natural capital have to provide information on the share of licensed operators as opposed to informal ones, on the knowledge of mineral reserves, as well as on the environmental performance of the activity, notably on the land area affected by ASM, annual land degradation and rehabilitation, as well as on the use of mercury.

Additional human capital indicators to be monitored at the ASM operation level include lost workdays due to illness and mine accidents, number of lethal accidents, and the value of protective equipment used at the mine sites. Information on average net income from mining and access to credit is indicative of the financial resources the activity generates or that are available for investment, respectively. Supplementary social capital measures at this level have to denote the extent to which miners have links to ASM associations and labor unions.

Data on the value of the mining, processing and transport equipment owned per production unit are required for an assessment of the physical capital employed by the sub-sector. The two indicators of operational efficiency, labor productivity, and mineral recovery, relate to the income earning potential of the activity.



*Artisanal gold miners, Zimbabwe*

## 5.4 The 25 most relevant indicators

We selected 25 most relevant indicators based on several criteria. The indicators had to be:

- Relevant for poverty reduction and the improvement of livelihoods.
- Practical and easy to collect during a one or two day return visit to the community. Household income did not qualify, for example, because it is difficult to estimate in a short period.
- Allowing for monitoring change. The grade of the ore is a poor indicator because usually it cannot be changed.
- Pertinent to people in the community. Male and female community members consistently ranked a community clinic, education, and water in the top three of most pressing needs (See progress report Rock Crystal).
- Important for policy (See recommendations progress report Rock Crystal). High rates of drug use, for example, may have a long term impact on public health and social cohesion in the community and hence deserves attention. Similarly, it was discovered that mercury is gaining local popularity. It is important to monitor whether the use of and knowledge about this toxic chemical are changing.
- Compatible with international poverty measures. The United Nations Human Poverty Index, for example, ranks countries based on the percentage of the population with access to clean drinking water and adult literacy, among other indicators.

Some of the indicators we selected are collected at the community level. Others are household level indicators but can easily be estimated at the community level (e.g. number of bicycles and cars). Yet others need to be asked at the household level, such as the ownership of a transistor radio. To get at these indicators, the researcher(s) could select and track a small number (20) of households in the community. The 25 indicators that, based on the above criteria, we deem most relevant are:

### *Natural Capital*

- 1) Year-round community access to sufficient and clean water (for drinking, bathing, washing, washing gold, etc.)
- 2) Percentage of households with access to agricultural land

### *Human Capital*

- 3) Population size
- 4) Travel time and distance to nearest clinic
- 5) Percentage of school-aged children (<=12 years of age) attending primary and/or Islamic school (M/F)
- 6) Adult literacy (M/F)
- 7) Percentage of community members who are migrants (Living < 5 years in community).

### *Financial Capital*

- 8) Percentage of households with transportation vehicles such as cars, motor bikes, bicycles
- 9) Some culturally relevant measure of household or community level contributions to religious/ceremonial events over the past year
- 10) (Community level) unemployment rates (M/F)
- 11) Typical and range of incomes earned by artisanal and small-scale miners, including carriers and washers

### *Social Capital*

- 12) Number of publicly or privately owned community centers, including video viewing rooms.
- 13) Number of religious worship houses (church, mosque, temple) in the community.
- 14) Number of crimes that physically harmed someone over the past year

### *Physical Capital*

- 15) State of the road. Community can be ranked on a scale from 1 (poorest) to 3 (wealthiest) where 1=motor accessible track; 2=graded (secondary) dirt road; 3=paved (tart) road.
- 16) Percentage of households owning a home made out of modern construction materials. Households can be ranked on a scale from 1 (poorest) to 3 (wealthiest) where 1= mud walls and roof of organic matter; 2= mud walls and tin roof; 3= cement block or brick walls and tin plate roof.
- 17) Percentage of household with access to a well or borehole for clean drinking water in the compound.
- 18) Household access to information (small sample of target households). Households can be ranked on a scale from 0 (poorest) to 4 (wealthiest) where 0 = nothing; 1= transistor (pocket) radio, 2= radio-cassette player; 3= television; 4 = mobile phone (GSM)
- 19) Number and percentage of households with a generator for electricity

### *Mining specific*

- 20) Number of active mines
- 21) Number and percentage of community members who are miners
- 22) Percentage of mining labor force consisting of children below the age of 13
- 23) Percentage of mining labor force consisting of women
- 24) Percentage of miners using drugs, including capacity enhancing drugs (e.g. amphetamines), marijuana, and pain relievers at least once a week
- 25) Percentage of mine units using mercury (and other chemicals).

## CHAPTER 6 METHODOLOGICAL GUIDELINES

### 6.1 Sources of information

#### 6.1.1 Key informants

Key informants are individuals selected for their specialized knowledge about a topic of interest. Walking around an ASM site with a key informant is an effective, fast, and cheap method to gain general understanding of local socioeconomic, political, and environmental conditions. Good key informants can often be found by asking around in the community for the expert on a certain topic. They are:

- Reliable, that is, they provide information that is accurate.
- Communicative and open to sharing information with outsiders.
- Not contentious in the community.
- Representative -to the extent possible- of the heterogeneity in the community.

Key informants should include members from powerful and marginal groups, men and women, and miners and non-miners.

#### *Recommendation 1*

Work with carefully selected key informants. Information provided by one key-informant should be cross-checked with a second and preferably third person. Data validation needs to happen discretely as it may be considered a sign of distrust.

#### 6.1.2 Participatory methods

Participatory research involves community members in various stages of the research process, from development of the research design to the analysis and evaluation of results. Real participatory research requires a lot of time, experience with the community, and expertise on the part of the researcher and may be beyond the aims and scope of the baseline study. Nevertheless, several participatory methods are useful to ASM baseline research.

##### *a. Stakeholder analysis*

Stakeholders are people or groups of people who are directly or indirectly affected by, or have the power to affect, an event or situation. A stakeholder analysis lists these people, usually in a table. Additional information in this table depends on the study purpose and can include relative power to affect decisions; ways of being affected by the event; relations with other stakeholders; and access to assets and resources.

##### *b. Seasonal calendars*

Seasonal calendars provide a visual representation of the different activities performed by different population groups at different times of the year. They can be represented as an annual cycle, as a time line, or in any other way that suits the purposes of the researcher.

*c. (Gendered) resource mapping*

Resource maps provide a simplified map of the target site with the location of different types of natural, human, and/or other resources. These maps can show who has access to, and control over, the resources in question. In gendered resource mapping, symbols for men and women visually show the gender division of resources.

*d. Community consultation*

It is rewarding to return to the community after the preliminary data analysis to discuss your findings. Presentation of your data will allow people to better understand why you were asking all these questions. It also will help you to verify and correct information, fill gaps, clarify remaining questions, and in many other ways improve the accuracy and completeness of the final report.

*Recommendation 2*

The agency commissioning the study should reserve room in its budget for sharing formal results (e.g. final report) as well as informal research results (e.g. photographs) with the community.



*Consultation with women in an artisanal mining community in Nigeria*

**6.1.3 Household surveys**

A household survey is a list of, mostly closed-ended, questions that are asked to all or a representative sample of households in a certain village or region. The typical household survey asks about household demographics and economics in addition to the specific study subject, and lasts between 30-60 minutes per household. Researchers have also

used surveys to assess local knowledge, attitudes, and awareness about a certain topic, such as mining impacts. Household data can be presented in the form of summary statistics to characterize the sample population. In addition, they can be used to test relationships between variables of interest such as participation in small-scale gold mining and indicators of wealth and health.

*Recommendations for survey design (3)*

- Develop a questionnaire based on prior qualitative research or previous research experience in the area. Even if one chooses for a generic survey format (e.g. ANNEX III), information obtained from open-ended interviews, focus groups, and observations will shape the language and specifics of the questions.
- The information obtained by questionnaires will tell you more if using scales and values rather than yes/no answers. For example, instead of asking “Does the village have a clinic?” one can record “Distance in travel time (h:min) or km to the nearest clinic”.
- Test the survey prior to data collection. Even the best surveyor cannot know whether the questions developed at home are clear, unambiguous, and inoffensive to the target population. Two, three, or more tests may be needed before a survey gets at answers that have scientifically merit.
- When targeting individuals, design the quality and quantity of questions so that the entire survey will not take more than 30-45 minutes time to complete.

*Recommendations for survey implementation (4)*

- Find out what are the best hours of the day to interview, and reserve those hours for interviewing.
- A good research assistant is an invaluable source of information and support. Hire and train a local research assistant to assist in survey design, provide baseline community information, help with sampling, explain the questions to respondents, and verify and interpret answers.

*Recommended time frame for conducting a household survey (5)*

- Identify, collect, and analyze relevant secondary and qualitative data (1 week)
  - Devise survey forms (3 days);
  - Pre-test surveys in the field and train local assistants (1 week)
  - Undertake the household survey with assistants (1-4 weeks)
  - Enter and clean data (1 week)
  - Analyze data and write-up results (4 weeks)
- TOTAL: 2-3 month

Well-designed household surveys provide a wealth of information about livelihoods that can be a basis for policy decisions. Moreover, they can be duplicated –often with minor adjustments– in different areas and over time, which allows for documentation of spatial variation and changes over time. The research team will need to keep in mind that developing good questions; designing an effective survey protocol; collecting valid and reliable answers; recording answers rapidly yet securely; and, ultimately, analyzing and

presenting data in a meaningful way require a lot of time and practice. Also, for a larger scale (national or regional level) baseline study, a household survey may not be the most appropriate means to collect information.

A Sample Household Survey Template is attached as Annex III.C

*Recommendation 6*

Employ someone with prior experience conducting household surveys to supervise, develop, and conduct survey work. Prior research experience or familiarity of this person with the target area will significantly improve data quality.

#### **6.1.4 Village surveys**

A village survey is a list of questions meant to characterize the community. A village surveys will provide the basis for a community-level baseline study, but also may suit regional- or even national-level baseline studies. Questions usually are closed-ended and quantitative. Nevertheless it is valuable to leave open space to record qualitative observations. A village survey for a mining baseline study should include sections that represent all five livelihood-categories and treat mining households as a distinct group in the community. It also should include measures of village dependency on mining and other mining-related indicators. ANNEX III.A provides a blueprint for a recording sheet that can be used to collect general community-level data. A sample template for ASM-specific community-level information is presented in ANNEX III.B.

In our experience, most survey questions can be answered during a general community meeting with a representative sample of the community present. We have also found, however, that when calling a community meeting, women are frequently not invited. The researchers should make an effort to also incorporate women's information, views, and opinions, either by asking them to attend the community meeting or by holding a separate meeting for women.

*Recommendation 7*

Use village-level surveys to develop a broad understanding of the community in general, and of its relation to and reliance on ASM specifically

*Recommendation 8*

Enhance data accuracy by ensuring the participation of all groups in the community in the research, including women, ethnic minority groups, migrants, and other inhabitants.

#### **6.1.5 Focus groups**

Focus groups are facilitated group meetings aimed at collecting qualitative data about a topic of interest through discussion among participants. Focus groups typically last

between one to two hours, and are often conducted separately for specific interest groups (e.g. women and men, older and younger people). The researcher should be familiar with the group culture, topic, and facilitation techniques. Discussion among participants will allow the researchers to (a) collect qualitative data on perceptions of and attitudes towards the topic of interest, (b) document the most pressing concerns, (c) record popular (mining-related) myths and stories, and (d) identify sources of agreement, disagreement, and contention within the community.

Focus group templates for collecting information about women and children, and their role in ASM, are attached as Annexes III.F and III.H, respectively

*Recommendation 9*

Consider collecting data from women and children through focus group discussions. This method is relatively low time and cost intensive, and provides a wealth of information.

*Recommendation 10*

Avoid taking part in the discussion or revealing your personal opinion. Participants may try to explore the researcher's point of view in order to tell the researcher what they suppose he/she likes to hear.

## **6.2 Sampling**

There are seven major kinds of samples. “Three of them –simple random, stratified random, and cluster samples– are based on the principles of probability theory. The other four –quota, purposive, snowball, and haphazard samples– are not.” (Bernard 1995: 73. Sampling strategies are explained in more detail in Bernard 1995, Ch. 4)

For example, if the sample population consists of all households in one particular community, one may take a simple random sample by interviewing each third or N<sup>th</sup> household one encounters, by numbering all households and drawing the required number of households from a hat, or by interviewing all households on randomly drawn transect lines through the villages. If the purpose of the research is to understand mine safety, one may want to use purposive or judgment sampling to find mine operators and people who have experienced accidents. In judgment sampling you decide the purpose you want an informant, household, or community to serve and you go out to find one.

*Recommendation 11*

Carefully define your target population and study objective, and based thereupon select a sampling strategy and survey design.

### 6.3 Data validity and reliability

Several characteristics of ASM communities present a challenge to collecting reliable data<sup>13</sup>:

- Informality and illegality make that ASM populations and activities are poorly documented and, typically, not recorded in a consistent matter over time.
- Qualified consultants are sparse. Local people may not have the type of skills to collect the kind of data and write the type of report an international agency is looking for. Short-term foreign consultants may not have adequate understanding of local (mining) cultures.
- People may give false or incomplete information because they:
  - Are tired of researchers and research projects that do not bring change
  - Prefer secrecy because of (semi)illegality
  - Distrust researchers, international agencies, and public officials who conduct, commission and endorse the study.
  - Do not know the answer (e.g. annual household income)
  - Have no written track-record on minerals production, sales, inputs, quality of ore, etc.
  - Do not perceive the questions as relevant to their lives.
  - Want to avoid payment of taxes and fees to others (in case of earnings)
  - Fear of being robbed

Obtaining trust requires time and multiple return visits to the community, but limits to funding and resources often do not allow for taking this time.

#### *Recommendation 12*

Researchers as well as the agency(s) commissioning and funding the study should dedicate a considerable amount of time and money to building relationships of trust between the data collectors and the community.

#### *Recommendation 13*

Compile a consulting team with international, national, and local consultants. Local consultants can be community leaders or students with long-term experience in the field site, who speak the local language, and understand local cultural codes. If no qualified local people are available, a more experienced outside consultant can contribute to local capacity building by training local consultants.

#### *Recommendation 14*

Respect international standards for working with human subjects. These standards are available from most universities as well as from the American Anthropological Association (<http://www.aaanet.org/committees/ethics/ethcode.htm>). Guidelines include being clear and explicit about project goals and informing potential study participants about their rights, possible harm, and benefits from participation.

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<sup>13</sup> See Heemskerk 2004

## 6.4 Quantitative and qualitative data

Understanding the complex working and family lives of artisanal and small-scale miners requires integration of qualitative and quantitative data. The aim of *qualitative data* is to generate an accurate, detailed interpretation of a research question. Qualitative data are collected through (participant) observation, open-ended questions, oral histories, free-listing, and other techniques that do not seek to establish absolute values for the researched items. *Quantitative data* seek to establish absolute levels or values on things, by counting or by rank-ordering into categories.

Quantitative and qualitative data build upon one another, and their interactive use benefits both. Qualitative information can improve the design of survey questions for the collection of numeric data. Quantitative data, in turn, can reveal differences between households and relations between variables that can be further investigated and explained through qualitative techniques. Depending on the aims and scope of a study, the researcher can give priority to one type of data over the other.

### *Recommendation 15*

Integrate qualitative and quantitative data

## 6.5 Interdisciplinary cooperation

Characterization of ASM in a context of poverty eradication and sustainable livelihoods requires understanding and documentation of technical, socioeconomic, cultural, political, legal, and environmental issues and processes. It is unlikely that one person or one discipline has expertise in all areas.

### *Recommendation 16*

Baseline studies should be conducted by interdisciplinary teams that contain members from both the social sciences (anthropology, economics) and the natural sciences (ecology, engineering). The teams also should be balanced in terms of gender

## 6.6 Sources of secondary information

Secondary data consist of information and (aggregated) statistics that have been collected and recorded by others. Secondary data are found in reports, statistical yearbooks, and published and unpublished documents from governments, non-governmental organizations, and international institutions. Table 6.1. lists key sources of secondary information relevant to ASM baseline studies.

Table 6.1 Sources of secondary information

Level	Institution	Type of data/ Name of publication
Int'l	See Table 4.2	See Table 4.2
Country	National bureau of statistics Public/national department of mining and geology Central Bank & other national gold buying agents	Statistical yearbook (annually) Mining laws, (estimated) numbers of legal and illegal miners, gold production. Declared gold production and estimated undeclared gold production
Regional	National bureau of statistics  Regional government	Some institutions can, upon request and for a small fee, provide disaggregated data for a specific region Quantitative and qualitative data on the context of mining in the region, environmental problems, regional wages, crime, and other indicators
Local	Local clinic Local school  Local government	Frequency of (reported) disease and accidents School attendance and educational achievement (quantitative or qualitative) Local governance and decision-making structures

Data from international institutions can usually be downloaded from their web sites. Local and regional level data are often more difficult to find, if they exist at all. In many cases statistics related to ASM do not exist or are inaccurate, lost, or dislocated. Furthermore, government personnel may not readily release information, even when it concerns information that should be publicly available.

*Recommendation 17*

Cross-check national statistical data with data and qualitative observations from local Non Governmental Organizations and international organizations including the World Bank, the International Monetary Fund, the United Nations, the International Labour Organization, and the World Health Organization.

Table 6.2 presents references and links to useful resources that can assist the researcher in carrying out baseline surveys. References are listed in the three areas of ASM specific research and publications, data sources for benchmark indicators, and other quantitative information, as well as methodological guidelines for profiling work.

Among all organizations currently dealing with ASM, the multi-donor networking and coordination facility on Communities and Small -Scale Mining (CASM) provides the most comprehensive and extensive knowledge base specific to ASM. CASM maintains a knowledge center that includes a community database, a document database and project database.

The Mining, Minerals and Sustainable Development (MMSD) project, managed by the International Institute for Environment and Development, carries out research aimed at enhancing the contribution of the mining and minerals sector to sustainable development. As part of this effort MMSD has completed a number of baseline reports on artisanal and

small-scale mining in developing countries, including studies on China, India, Indonesia, Papua New Guinea, Philippines, Bolivia, Brazil, Ecuador, Peru, Burkina Faso, Ghana, Mali, as well as a report on the SADC region and a global ASM-study. All the reports are available for downloading at the MMSD website.

The Intermediate Technology Development Group (ITDG) has a long history of assisting small enterprises in developing countries. ITDG's Mining Programme focuses on identifying and introducing more efficient and appropriate mining and mineral processing techniques using affordable locally manufactured equipment and tools. The group maintains resource centers at its regional offices which are open to the public and provide literature and information on appropriate technology in mining and mineral processing.

The Mineral Resources Forum (MRF) managed by the United Nations Conference on Trade and Development (UNCTAD) maintains the MRF Small-Scale Mining subsection that deals specifically with issues related to ASM. The main focus is on environmental aspects, health and safety, women and children participation, organizational, technical and financial constraints, as well as regulatory and legal normalization. MRF provides information on news, events, documents and related sites.

The World Development Indicators published annually by the World Bank provide a comprehensive collection of development and poverty-related indicators at the national level that can be used for baseline work. Other important data sources include the United Nations Statistical Yearbook, as well as special statistical publications of UN agencies, notably the International Labour Organization (ILO), the World Health Organization (WHO) and the United Nations Educational, Scientific, and Cultural Organization (UNESCO).

The U.S. Geological Survey is a valuable source of mining industry data. The annual publication Mineral Commodity Summaries present information on production, prices, reserves, and events and trends of more than 80 mineral commodities. The Minerals Yearbook is an annual publication that reviews the mineral and material industries of the world. The Yearbook includes chapters on approximately 90 commodities and 175 countries, with statistical data on materials and minerals, as well as information on economic and technical trends and developments.

DFID's Sustainable Livelihood Guidance Sheets offer a comprehensive and detailed collection of instructions for the process of investigating livelihoods for project and policy purposes based on the sustainable livelihood framework, particularly those of the poor. The guidance sheets contain directions on the scope and scale of the analysis, the sequence of work, as well as a description of the methods and common tools suitable for investigating livelihood assets, strategies, outcomes and vulnerabilities. The United Nations Development Programme (UNDP) also provides an introduction to the process of sustainable livelihood analysis, including a guidebook for field projects and related literature.

Table 6.2 References and links

Reference	Useful resources	Links
<b>ASM research</b>		
CASM Communities and Small -Scale Mining	Knowledge center with contact, document and project database on ASM.	<a href="http://www.casmsite.org">www.casmsite.org</a>
MMSD Mining, Minerals and Sustainable Development	Country and regional studies on ASM (downloadable).	<a href="http://www.iied.org/mmsd">www.iied.org/mmsd</a>
ITDG Intermediate Technology Development Group	Projects and research related to ASM, including best practise studies.	<a href="http://www.itdg.org/html/small_scale_miners/small_scale_miners.htm">www.itdg.org/html/small_scale_miners/small_scale_miners.htm</a>
MRF Mineral Resources Forum (UNCTAD)	Knowledge center with information and links related to small-scale mining.	<a href="http://www.natural-resources.org/minerals/smscalemining/index.htm">www.natural-resources.org/minerals/smscalemining/index.htm</a>
<b>Data sources</b>		
The World Bank	World Development Indicators: source of benchmark indicators.	<a href="http://www.worldbank.org">www.worldbank.org</a>
ILO International Labour Organization ILO/AIDS	Labor statistics; safety and health in small-scale mines; Special site dedicated to information on the social and economic impacts of HIV/AIDS, including statistical data.	<a href="http://www.ilo.org">www.ilo.org</a> <a href="http://www.ilo.org/public/english/protection/trav/aids/">www.ilo.org/public/english/protection/trav/aids/</a>
International Monetary Fund	Annual and country reports	<a href="http://www.imf.org/external/pubind.htm">www.imf.org/external/pubind.htm</a>
United Nations (UN)	<i>Statistical Yearbook</i> (not online) and various world, regional, and country specific reports,	<a href="http://www.un.org/Pubs/index.html">www.un.org/Pubs/index.html</a>
UNESCO	World Education Indicators; Country profiles.	<a href="http://www.unesco.org">www.unesco.org</a>
WHO World Health Organization	World Health Report (with statistical annexes) Health indicators and data on specific diseases incl. HIV/AIDS prevalence.	<a href="http://www.who.int">www.who.int</a> <a href="http://www.who.int/country/en/">www.who.int/country/en/</a>
U.S. Geological Survey Minerals Information	Mineral Commodity Summaries; Minerals Yearbook, including country and commodity chapters.	<a href="http://minerals.usgs.gov/minerals/">http://minerals.usgs.gov/minerals/</a>
<b>Methodology</b>		
DFID Department for International Development	Sustainable livelihood guidance sheets: SL approach.	<a href="http://www.livelihoods.org/info/info_guidancesheets.html">http://www.livelihoods.org/info/info_guidancesheets.html</a>
UNDP	Introduction to SL approach (A guidebook for Field Projects	<a href="http://www.undp.org/sl/documents/documents.htm">www.undp.org/sl/documents/documents.htm</a>

## CHAPTER 7 DATA ANALYSIS AND REPORT WRITING

### 7.1 Data recording and compilation

When developing a system to record data, the following concerns have priority: reliability, relative ease of recording, validity, and security. *Reliability* refers to whether one gets the same answer by using an instrument to measure something more than once. It requires that information about different villages or households, and information collected by different researchers, is recorded according to the same principles and in the same format. *Ease* means that data recording is straightforward and can be done rapidly. As an interviewer, you want to concentrate on your conversation partner. You do not want to be bent over a notebook scribbling down lengthy answers on standard questions.

A few guidelines can help:

#### *Recommendations to improve data recording (18)*

- Select appropriate units, scales, codes, and categories prior to data collection. Make sure that all data collectors are trained in the use of these standards.
- Use a standard survey form with questions that ask for relatively short and straightforward answers that can be recorded in writing (see ANNEX III).
- List locally used units for weights and volumes. Convert these units to standard metric units. For example, 1 barrel of oil is 200 liter; 1 bag of rice is 25 kg.
- Develop codes for answers that are anticipated. For example, instead of writing down a migrant's region of origin, one can code all relevant provinces 1,2...n
- Keep detailed field notes and a log
- Anticipate climatic events, animals, and other factors that may destroy your recordings. For example, in a humid climate one may want to use waterproof notebooks, and store materials in zip-lock bags or other waterproof storage devices.
- Always back up files. Where there are no ways to use a computer or make photocopies, it may be possible to record new findings on a cassette-tape in addition to keeping a written record.

Data *validity* refers to the accurateness and trustworthiness of the data. The data recorder can guard data validity by taking detailed field notes and a log for the duration of the research. Because human memory is a poor recording device, it is advisable to keep a field book in hand at all times to make field jottings and notes on the spot. This applies to both formal and informal interviews that the researcher conducts with people in and around mines, in bars and restaurants, and on the street. One should be sensitive to feelings of the people around you about recording. A good log will help one recall where certain pieces of information came from, and how gaps in data can be explained. *Security* means that data will not be lost.

Quantitative data, notably benchmark indicators, should preferably be compiled in electronic format using standard spreadsheet software (e.g. MS Excel). This will facilitate computing statistical measures (e.g. mean values of communities, number sampled, etc.) and transfer to a statistical analysis software package (e.g. SPSS, SAS, STATA)

## 7.2 Data reporting

### 7.2.1 General

Data reporting should follow international scientific guidelines. ANNEX IV presents a model outline for a baseline report.

### 7.2.2 Significant Figures

In order to provide meaningful quantitative data or indicators, special attention should be given to significant figures. This was not an issue decades ago when computation was done by hand, but the use of computer programs and calculators allows for easy computation of “nonsense decimals”. An example can illustrate this: The observation that 11 samples out of a total of 21 meet a certain criteria, is frequently reported like 52.38%. With even higher mathematical precision the result could also be expressed as 52.38095% or even 52.38095238095%. How many decimals are significant and should be reported?

For the determination of significant figures two basic considerations should be kept in mind:

**a) When measurements are being made, the results cannot be more accurate than the instruments used to make the measurement.**

In case of analog instruments usually the last figure can be estimated and has to be considered a significant figure.

		
<p>The time on this clock is 10:13. Seconds cannot be estimated and therefore are not significant figures. Minutes have 2 significant figures.</p>	<p>Temperature is 56°, Measurement has 2 significant figures.</p>	<p>Market price of a goat is about \$150. As price may vary between 130 and 170, the measurement of this capital asset has only 2 significant figures (the “5” in the number 150 is estimated)</p>

In case of digital instruments the number of significant figures is given by the instrument.

		
<p>Both measurements, 169.1 and 1.844 are of same precision, i.e. 4 significant figures.</p>	<p>Survey indicates 25 people. The result has 2 significant figures</p>	<p>Household savings of family X are exactly \$20.-- The measurement has 4 significant figures</p>

**b) When measurements are being mathematically manipulated, the number of significant figures in the result cannot be greater than the number of significant figures in the least accurate measurement.**

Examples:

- When calculating an area of 1.2 km length and 132.3 meters wide, computation gives 158,760 m<sup>2</sup>. As the length is only known with accuracy of 2 significant figures, the correct result is 160,000 m<sup>2</sup>.
- When calculating financial capital, it may be found that family X owns in livestock 33 goats with a market value of about 150 \$ each, and savings at the local bank of \$ 1233.78. Computation gives  $(33 \times 150) + 1233.78 = 6183.78$  \$  
As the price of a goat may vary according to negotiation or season, it is the least accurate measurement with only 2 significant figures. The result has therefore to be expressed correctly as \$ 6,200 of financial capital.

The same applies to computing averages or percentages:

The average of the following five observations (35, 41, 39, 42, 36) is not 38.6, but 39, as every single observation has only 2 significant figures.

Finally, coming back to the example of the introduction:

The observation that 11 samples out of a total of 21 meet a certain condition, is frequently reported like 52.38%. With even higher mathematical precision the result could also be expressed as 52.38095238095%. All these reported results are wrong!

As the total sample size (21) has only 2 significant figures, and also the number of positive coincidences with the investigated condition (11) has 2 significant figures, the

result cannot be expressed with more than 2 significant figures. The correct result is therefore none of the above, but 52%.

### **Expressing significant figures in large numbers**

If numbers are expressed according to significant figures (example: the “3” in 121.3 indicates an accuracy of 4 significant figures), problems may arise with large numbers like 2000 or 300.000 as it comes not immediately obvious, which of the “0” determines the accuracy.

300,000 may indicate a result in the range of 250-350.000 (2 significant figure with last figure estimated) or in the range of 299.995-300.005 (6 significant figures with last figure estimated).

Unless it is clear within the context of the text, the best workaround in many cases is to choose a larger unit size, as zeros behind the decimal point are generally understood as indication of accuracy. 2,000 meters can for example be expressed as

- 2 km (1 significant figure),
- 2.0 km (2 significant figures),
- 2.00 km (3 significant figures) or
- 2.000 km (4 significant figures).

### **Using common sense**

Reporting the number of inhabitants of a certain area is only one example for the need to apply just common sense. If reporting the results of a census, the information of **1,306,402** inhabitants is correct, as the result of the census has in fact 7 significant figures. If referring to the same area as potential beneficiaries of a project, reporting **1.3 million** inhabitants is much more reasonable, as the census might be somehow outdated, not all inhabitants may benefit from the project, and several other uncertainties.

### **Use international standards units to express numeric data**

Finally, use international standard units when expressing values rather than diverse local measurement units. Distances should be recorded following the metric system (meters, km), weights also should be based on the metric values (gram, kg), and monetary values should be expressed in US dollars. For example, it is difficult to know how a 1999 mining income of 5000 Fmg earned in Madagascar compares to the income of 5000 CAF francs earned by a Congolese miner in 2002.

## **CHAPTER 8**

### **MODEL TERMS OF REFERENCE**

#### **8.1 Introductory remarks**

The objective of the present project is, to develop a proposal for a standard related to contents and minimum data requirements of baseline surveys for profiling artisanal and small-scale mining in Africa. While standardization, based on best practice identified in past country-baseline-surveys, increases the chances that future profiling work will deliver the necessary information, it must not force the researcher into using an inflexible norm, incompatible with the manifold faces of artisanal mining in different countries.

The model terms of reference, therefore, do not repeat or incorporate the toolkit components in a rigid, mandatory way. Instead, they refer to the “toolkit” in the proper sense of the term, i.e. as a set of tools that may be used to get the job properly done. Some tools are inherently obligatory, while the selection and application of others need the experience and criteria of the professional working with them.

On the other hand, the general layout of the expected product should be specified in detail. Just as, for example, when constructing a house, the number of rooms and their use has to be determined, the model terms of reference specify the expected chapters and their content. To stick with that metaphor, the architect of a house needs to be clearly instructed about the purpose of the building; baseline surveys may be required for very different reasons and it is up to the contracting institution to specify the purpose of the baseline study as clear as possible.

Just like construction styles change over time, development strategies are subject to new insights and trends as well. Because of the proven value of the sustainable livelihood approach, the model terms of reference specify SLA as the methodological framework. Additional requirement of thorough documentation of applied data collection techniques and sources, will allow for a review and reevaluation even under possibly different future development approaches. The apparently strict terms of reference can again be compared with construction work: strict definitions of expected outcomes do not impose limits to the creativity of architects; - or consultants in the case of baseline surveys.

As mentioned earlier, thorough profiling requires an interdisciplinary team. Apart from that, it also requires time and resources, the availability of which will vary on a case-to-case basis. Estimates of the time required for thorough profiling typically may be in a range of 6-8 months for all project phases described in Chapter 3..

## 8.2 Proposal for Terms of Reference

### I. Research Background and Purpose

Artisanal and small-scale mining (ASM) is a widespread phenomenon in the developing world. It is both an opportunity driven and poverty driven activity that offers a means of survival for millions of people in rural areas where job opportunities are scarce. While ASM can reduce poverty and promote sustainable livelihoods, it frequently causes a number of harmful effects, including health and safety hazards, environmental destruction, child labor and community conflicts. This negative impact occurs where ASM is conducted on an ad-hoc and informal basis without the adequate planning and access to information, and outside the legal norms governing the extractive industry.

Recognizing the dimension of this problem, multinational organizations, bilateral agencies and national governments have been and still are searching for policies and programs aimed at eliminating the undesirable side-effects of artisanal mining without jeopardizing the income generating opportunities the activity can provide. Designing appropriate policies and programs requires an in-depth knowledge of the ASM sub-sector, including an understanding of the motivations, needs and limitations of the people involved in the activity as well as those affected by it. Acquiring this knowledge will necessitate the preparation of a detailed diagnostic study in the form of a baseline survey.

The present baseline survey encompasses the following study area: ..... [*determination and delimitation of the target area on a case by case basis*] .....

The preparation of the baseline study shall be guided by the vision declared at the UN Seminar on artisanal and small-scale mining in Africa, held in Yaoundé in November 2002, that policies and programs directed towards the sub-sector will contribute to a **sustainable reduction of poverty and improvement in livelihoods in African small-scale and artisanal mining communities by the year 2015.**

The objective of this research effort is to deliver a baseline survey sufficiently comprehensive and accurate to serve as a basis for the formulation of policies and programs required to transform the ASM sub-sector of the study area in line with the Yaoundé vision. This requires the provision of qualitative and quantitative information that

- a) Contributes to a more integral understanding of the cultural, social, economic, political, governance, environmental and technological dynamics of ASM, and its impact or lack thereof on poverty reduction.
- b) Provides a more thorough or relevant basis for designing and implementing programs aimed at reducing poverty and achieving local social, economic and environmental sustainability.
- c) Allows for appropriate monitoring of progress towards poverty reduction and livelihood improvement by measurable indicators.

More specifically, the purpose of the baseline study is to provide all information critical and necessary to know for ..... *[description of the program that requires the baseline study, providing all details necessary for the consultant to elaborate useful recommendations]* .....

## **II. Methodological Approach**

(a) Because of its special focus on the analysis of the livelihoods of the poor and on improving performance in poverty reduction, the sustainable livelihood approach (SLA) is the underlying framework for the baseline study. The “Toolkit for ASM Baseline Studies” developed by CASM provide an introduction to the concepts and tools used in this approach. The SLA examines the livelihood assets natural capital, human capital, financial capital, social capital and physical capital of the target community and how the vulnerability of livelihoods is affected by external shocks, trends and seasonality. It further investigates how government and private sector structures and processes influence livelihood strategies adopted to achieve desirable livelihood outcomes, notably higher income and reduced vulnerability.

(b) The baseline study shall be carried out as a combination of desk research and field surveys. During the desk research secondary information shall be collected from a review of the recent literature on the subject in the study region, and the compilation of relevant statistical data on the national and regional level. Field surveys shall be designed to collect primary information based on direct observation and interviews in a representative number of target communities. In the selection of target sites for field surveys, communities or areas with high intensity ASM activities and a large estimated number of people involved shall be given preference. Attention should also be given to ASM activities and minerals other than the main ones (precious metals and gemstones) which may have the potential to grow and to diversify the sector.

(c) The baseline study shall be carried out by an interdisciplinary team, comprising an appropriate mix of consultants with backgrounds in social sciences, natural sciences and engineering, as well as experience with SLA. Apart from international and national consultants, also local consultants (e.g. community-leaders, local mining associations) shall be included in the team who are familiar with the target community and the study area, speak the local language and understand the local cultural codes. The team also should be balanced in terms of gender.

(d) The baseline study has to provide diagnostic insights into the current status of the ASM activities in the study area, sufficiently detailed to permit the formulation of policies and programs required to transform and strengthen the sub-sector in line with the Yaoundé objectives. To allow the measurement of progress toward these objectives, baseline reports have to include quantitative data that can be used as relevant benchmark indicators. At the national level adequate indicators are readily available from UN and World Bank annual statistical publications, notably the World Development Indicators. These data shall be complemented by statistical data from national sources. Comparable

quantitative data on indicators at the community and ASM operation level shall be collected and/or verified during the field surveys.

(e) All relevant data sources, including pertinent literature references and statistical publications reviewed, key informants, stakeholders interviewed and persons contacted, as well as formats applied or data collection techniques have to be documented in sufficient detail to facilitate the verification of information presented, an independent technical audit of the baseline report in case of need, or allowing for periodical updates of the survey and tracking of changes towards the development objective over extended periods.

(f) The toolkit attached to the Terms of Reference shall be applied to the extent possible. This document comprises (i) a checklist of critical issues and information necessary, (ii) a set of indicators which serve as benchmarks against which progress towards objectives can be measured, (iii) methodological guidelines and recommendations for carrying out field surveys, (iv) model survey templates, and (v) a model outline for a baseline report. All these tools may be adapted in order to provide more comprehensive and accurate information.

### **III. Scope of Work and Research Tasks**

According to the methodological guidelines of the attached toolkit, the baseline study shall follow a standard, international scientific format for data reporting. This will comprise the tasks outlined below to be reported in the following sections of the report (see also Appendix III of the toolkit).

1. Executive Summary
2. Introduction, including the goal and objectives of the study and structure of the report.
3. Methods used to collect and analyze data. *Tasks* include the selection and preparation of the survey instruments, determination of sampling methods, sites and sample size; selection and training of local consultants, as well as validation of the research methodology. For details, see the methodology-section of the toolkit. The main text of the report shall provide a brief summary of the methodology applied, while detailed information shall be provided in the annex.
4. Research site, including a description of the country, study area, and specific research sites. *Tasks*: This part of profiling shall be carried out mainly in form of a desk study, compiling all necessary and critical information that characterizes the context of the study area. For details, see the “General issues checklist” and the “National level Benchmark indicators” of the toolkit. Information on the study area and related to specific research sites shall be complemented with observations made during field work. The body text of the report shall be descriptive and provide a clear understanding of the context using mainly qualitative data, with quantitative

information on a need-to-know basis. The complete quantitative profile, comprising all available and applicable indicators proposed in the toolkit, as well as useful additional indicators according to the consultant's criteria, shall be provided in the annex.

5. Background, which provides a general description of the artisanal mining sector and a listing of the problems. *Tasks:* The general description shall be carried out as combination of desk work compiling and reviewing existing information from related national private and public institutions and interviews of national specialists and key informants. For details see the sections "Definition of ASM" of the checklist, as well as the "ASM sub-sector size and structure" indicators of the "ASM operation level indicators". For details of necessary and critical information like mining legislation and structure of the mining sector, see the chapter "ASM-specific natural capital" of the checklist. This chapter shall provide a clear description of the sector-specific background and facilitate (in combination with the previous chapter) all information necessary for understanding the following Data chapter(s).
6. Data chapters, on Natural, Human, Financial, Social, and Physical capital. *Tasks:* This should be the main section of the report and be based mainly on primary data (livelihood assessment) obtained during field work. The "specific issues checklist", the "community level benchmark indicators" and the "ASM operation level indicators" of the toolkit provide a portfolio of issues to be covered in this chapter. Considering the variety of the ASM sector, the toolkit and the checklist have to be applied in a flexible and site-specific manner: it is the task of the interdisciplinary team to analyze the toolkit (based on the findings from field work) in order to define, which issues are most relevant within the study area, and constitute necessary and critical facts to be reported. The structure of the checklist is not imperative and does not necessarily determine the internal structure of this chapter, if the consultants consider that a modified sequence contributes to a better understanding of the artisanal miner's livelihoods.
7. Discussion and conclusions. *Tasks:* In addition to the usual discussion of the research findings and limitations encountered, the chapter should explain, why certain issues mentioned in the toolkit were not applicable or why complementary issues were considered critical and necessary. This information will allow for a better comparison of baseline studies carried out in different countries or regions, and will contribute to a progressive improvement of the toolkit itself. The conclusions shall clearly identify the essential deficiencies and weaknesses of the ASM sub-sector to establish the points of departure for policies and programs required to transform the activity in accordance with the Yaoundé vision.
8. Recommendations. *Tasks:* The recommendations shall be directly related to the purpose of the baseline study. It is expected that the recommendations are as specific as possible and go far beyond general statements (like: "mercury contamination should be reduced"), and allow for strategic decisions about policy

and program design, and improving performance in poverty reduction and development of sustainable livelihoods.

#### **IV. Validation of findings, reporting and feedback**

(a) The consultants shall prepare a written draft final report summarizing the findings on all research tasks and submit this report to [.....*the contracting institution* .....] to be further distributed to the national authorities in the study country responsible for the ASM sub-sector and related policy design. The consultants shall hold a community consultation to inform the study communities about the research results and invite feedback to be incorporated in the report. In addition, the consultant shall organize a national workshop at which the findings shall be presented to and discussed with a selected group of stakeholders, including representatives of mining authorities, district and local authorities, community leaders, artisanal miners and their family members, community members affected by the activity, as well as other stakeholders. The purpose of this workshop is to verify the findings and to close information gaps relevant for policy and program design.

(b) The community consultation and workshop shall also determine the most appropriate forms of feedback (FINAL report and FINAL results/recommendations) to the stakeholders and the researched community, making sure the members of the community not only get the relevant information but also understand why this exercise was undertaken and how they may also benefit from the knowledge. Moreover, stakeholders, e.g. community-leaders, mining associations, etc. should have access to the final report (even without internet access) to use it for their own agendas (lobbying, planning of projects etc.).

(c) Incorporating the recommendations offered by the workshop participants, the consultants shall prepare the final baseline report.

(d) All involved parties agree, that although the final product is their shared intellectual property, it shall be declared Public Domain and may be reproduced, distributed and used, without restriction or need for authorization by the sponsoring institution(s) or the author(s), as long as the reproduced or distributed version contains the information about sponsoring institution(s) and author(s).

## ANNEX I: BENCHMARK INDICATORS – TECHNICAL NOTES

### *Natural capital indicators*

Arable land: includes land under temporary crops, temporary meadows for mowing or for pasture, land under market and kitchen gardens, and land temporary fallow.

Permanent cropland: is land cultivated crops that occupy the land for long periods and need not be replanted after each harvest, including land under flowering shrubs, fruit trees, nut trees, and vines, excluding land under trees grown for wood and timber.

Freshwater resources: refer to total renewable resources, including internal flows of rivers, and groundwater from rainfall in the country and river flows from other countries.

Forest area: is land under natural or planted stands of trees, whether productive or not.

Average annual deforestation: refers to the permanent conversion of natural forest area to other uses.

Negative numbers indicate an increase forest area.

Higher plants: refer to native vascular plant species (only flowering plants).

Mammals: exclude whales and porpoises.

Birds: are listed for countries included within their breeding or wintering ranges.

Household: includes ASM and non-ASM households.

ASM household: refers to households which derive more than 50 % of their cash income from mining.

### *Human capital indicators*

Physicians: are defined as graduates of any faculty or school of medicine who are working in the country in any medical field (practice, teaching, research).

Life expectancy at birth: is the number of years a newborn infant would live if patterns of mortality prevailing at the time of its birth were to stay the same throughout its life.

Under-five mortality rate: is the probability that a new-born baby will die before reaching age five, if subject to current age-specific mortality rates.

Prevalence of child malnutrition: is the percentage of children under five whose weight for age and height for age are less than minus 2 standard deviations from the median for the international reference population ages 0-59 months. The reference population is based on children from the United States, who are assumed to be well nourished.

Prevalence of HIV: refers to the number of people who are infected with HIV among the adult population.

Adult illiteracy rate: is the percentage of the people ages 15 and over who cannot, with understanding, read and write a short, simple statement about their everyday life.

Primary completion rate: is the total number of students successfully completing the last year of primary school in a given year divided by the total number of children of official graduation age in the population.

Average years of schooling: are the years of formal schooling received, on average, by adults age 15 and over.

Total population: includes all residents, regardless of legal status or citizenship, except for refugees not permanently settled in their country of asylum, who are generally considered part of the population of their country of origin.

Target area: is the geographical area under investigation to be defined by the researchers conducting the survey.

ASM population in target area: ASM includes all persons engaged in artisanal and small-scale mining and related peripheral production activities as defined by the researchers conducting the survey.

Share of migrants in ASM population: is the percentage of people active in ASM who are not indigenous and do not intend to permanently settle in the target community.

Females as percentage of labor force: show the extent to which women are active in the labor force.

Children 10-14 in labor force: refer to the share of that age group active in the labor force.

Children below 10 in labor force: refer to the share of that age group active in the labor force.

### *Financial capital indicators*

Rural poverty rate: is the percentage of the rural population living below the national rural poverty line.

Urban poverty rate: is the percentage of the urban population living below the national urban poverty line.

Population on 1\$ a day and population on 2\$ a day: is the percentage of the population living on less than \$1.08 a day and \$2.15 a day at 1993 international prices. Poverty rates are comparable across countries.  
Gross national income (GNI) per capita: GNI is the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipt of primary income (compensation of employees and property income) from abroad. GNI per capita is GNI divided by midyear population.

PPP gross national income per capita: is GNI converted to international dollars using purchasing power parity rates divided by midyear population.

Deposit interest rate: is the rate paid by commercial or similar banks for demand, time, or savings deposits.

Lending interest rate: is the rate charged by banks on loans to prime customers.

Average household cash income from paid work: refers to cash income earned by all members of the household from paid labor or from the sale of own production and services.

Average household non-cash income from food production: refers to the cash equivalent of agricultural products produced by household members for own consumption.

Total average income per person: is the total average household cash plus non-cash income divided by the number of persons per household.

Average household cash expenditures for food: includes money spent on the purchase of food and beverages.

Average household cash expenditures for non-food: includes money on the purchase of non-food products and services.

Total average household cash expenditures: includes household expenditures on food and non-food purchases.

Share of cash food budget in household income: is the percentage of household cash expenditures on food related to total household cash income.

Share of households owning savings in cash assets: is the percentage of households with savings in cash, bank deposits or securities.

Household savings rate: refers to the percentage of household income not spent on consumption and saved.

### *Social capital indicators*

Public expenditures on pensions: includes all government expenditures on cash transfers to the elderly, the disabled, and survivors, and the administrative costs of these programs.

Average pension: is estimated by dividing total pension expenditure by the number of pensioners.

Public expenditure on health: consists of recurrent and capital spending from government (central and local) budgets and social (or compulsory) health insurance funds.

Violent offenses: refers to the number of violent crimes (murder, attempted murder, robbery, forcible rape, and aggravated assault) as defined in national legislation recorded by law enforcement authorities.

Property offenses: refers to the number of property-related crimes (burglary, larceny, motor vehicle theft, arson) as defined in national legislation recorded by law enforcement authorities.

### *Physical capital indicators*

Hospital beds: includes inpatient beds available in public, private, general and specialized hospitals and rehabilitation centers.

Access to an improved water source: refers to the percentage of the population with reasonable access to an adequate amount of water from an improved source (household connection, public standpipe, borehole, protected well or spring, and rainwater collection). Reasonable access is defined as the availability of at least 20 liters a person a day from a source within one km of dwelling.

Access to improved sanitation facilities: refers to the percentage of population with at least adequate excreta disposal facilities (private or shared, but not public) that can effectively prevent human, animal, and insect contact with excreta. Improved facilities range from simple but protected pit latrines to flush toilets with sewerage connection.

Households with access to services: are the percentage of households in formal settlements with access potable water (drinking water within 200 meters of the dwelling) and connections to sewerage, electricity, and telephone.

Passenger cars: refer to road motor vehicles other than two-wheelers, intended for carriage of passengers and designed to seat not more than 9 people, including driver.

Two-wheelers: refers to mopeds and motor cycles.

Radios: refer to radio receivers in use for broadcasts to the general public.

Television sets: refer to those in use.

### *ASM operation level indicators*

Mineral production: refers to the annual production of marketable mineral products by ASM operations measured in units of weight.

Production unit: refers to any formal or informal operation in which minerals are extracted and processed by one person or a related group of people typical for the target area.

Share of production units organized as: is the percentage of the number of mining operations organized in the form of ad-hoc groups, single proprietorship firms, co-operatives or registered partnerships.

Average duration of licensing process: is the time passed from submitting the application to the mining authority until the issuance of the licence.

Licensing costs: is the US\$ equivalent payable for a mining licence and related documentation.

Number of pending licence applications: is the total number of licence applications submitted to the mining authority for processing not settled.

Mine site inspections: refers to the number of visits by officials from the competent authority (mines inspectorate) responsible for the ASM district per year and production unit.

Number of conflicts: refers to the number of conflicts between ASM and large-scale mining companies and ASM and communities reported to law enforcement authorities per year.

Lost workdays/days due to illness: Lost workdays/days due to illness refers to the total number of days in the reference period in which a person is unable to perform his/her duties due to illness.

Protective equipment: refers to any equipment or device used by mine workers to protect them from injury and occupational diseases (safety hat, safety boots, goggles, protective gloves, protective respiratory device, hearing protection, first aid kit).

Lethal accident: all accidents at mine sites causing loss of life within a period of 30 days or as specified in national regulations.

Lost workdays due to mine accidents: include days away from work and days of restricted work activity resulting from occupational injuries to mine workers which occur at a mining operation and cause an inability to perform all work duties on any day after the injury.

Labor productivity: is the ratio of the average output of the marketable end product of ASM per person per day worked (e.g. grams of gold/day).

Mineral recovery: is the ratio of marketable end product recovered and available for sale to the quantity of mineral containing ore extracted and processed.

Share of miners with membership in ASM association: refers to the percentage miners who are members in a registered mining association.

Share of miners with membership in labor union: is the percentage of miners who are members in a registered labor union.

Share of production units with mining licence: is the percentage of ASM production units holding a valid prospecting or mining licence, or working on a property for which a mining licence has been granted to a title holder.

Share of production units with proven mineral reserves: is the percentage of ASM production units exploiting a mineral deposit for which reserves in terms of tonnage and grade have been established through detailed geological investigations.

Area affected by ASM: is the total land area in which artisanal and small-scale mining is currently active plus the land area of abandoned ASM mine sites not rehabilitated.

Annual land degradation: refers to the area of previously undisturbed land affected by ASM per year.

Annual land rehabilitation: includes the area of land affected by ASM restored in accordance with the reclamation requirements specified by the mining/environmental authorities.

Use of mercury in ASM: refers to mercury consumed in the amalgamation of gold ores.

Mine assets owned per production unit: refers to the estimated book value (initial investment less depreciation) of the purchased equipment in use.

Average income from mining: refers to the estimated amount of money earned in the mining activity less related expenses (for equipment, consumables and royalties).

Share of production units with bank loan: refers to the percentage of mining operations with a loan from a commercial bank or a registered financial institution.

## ANNEX II: EXAMPLES FOR RESEARCH TEMPLATES

Below we present examples for research templates. Given the diversity in artisanal mining experiences, it will be necessary to adjust these templates to your specific study site in terms of cultural setting, mineral deposit, economic opportunities, political context, and many other factors. It also is possible that you will not need, or prefer not to use, all templates. That is fine. Please regard these instruments as optional tools that may or may not be useful to your research site and study objectives. Included are:

- (A) *Community survey general*, to characterize the community in terms of the five asset categories: natural, social, physical, human, and financial capital. Among others, the various sections ask about access to natural resources, clean drinking water, educational facilities, and health care provisions, as well as about political structures and social organization.
- (B) *Community survey ASM specific*, to evaluate the local artisanal and small-scale mining context, including a technological assessment, make-up of the local mining population (e.g. percentages of women, children, migrants), the participation of women and children in mining, mining-related social conflicts, and the relative importance of mining to the community.
- (C) *Household survey*, to be conducted with household head(s) and to provide social, demographic, economic, health, and other information about all household members.
- (D) *Mining unit survey* for data about mining units and about all individual miners in a unit. Data on the earnings of miners, their expenses, and the specific labor organization in mining are collected from this template.
- (E) *Mining service provider survey*, to provide information about the individuals or groups that provide services to miners such as milling, sex work, trade, and so forth.
- (F) *Women's focus group*, to assess women's views on gender relations, power differentials between women and men, women's needs, and so forth.
- (G) *Environmental survey*, to record the natural vegetation cover and original fauna, and the impacts of mining on air, land, and water resources.
- (H) *Children's focus group*, to be applied in places where children work in artisanal mines. Children are asked about their family situation, labor conditions, educational options, earnings, and future perspectives.

## COMMUNITY SURVEY TEMPLATE

(A)

### FOR BASELINE DATA ON ARTISANAL AND SMALL-SCALE MINING COMMUNITIES

*General instructions:* Conduct one survey per village or community. Hold a community meeting, interview key informants, and conduct group interviews to find information on the listed indicators. Where possible, use coding to facilitate and standardize data entry and analysis. **DO NOT LEAVE ANY ANSWERING SPACES OPEN.** If the answer is “No”, “None”, or “Zero”, write down “0” (Zero). If you did not obtain an answer, place a horizontal dash in the recording space. Make a note in the column “Qualification/Description” when the data is unavailable, distorted, or for other reasons not accurate.

Project name: _____		
Project sponsor: _____		
Implementing institution: _____		
Local project director: _____		
Research coordinator: _____		
Country: _____	State: _____	District: _____
Village name: _____	Interviewee: _____	
Village ID: _____	Date & Time: _____	

Observations:

## A. General

Record how many of the following are present in the village or community. Try to count compounds<sup>14</sup> and households with the help of a community member to cross-check estimates:

Item	Designation	#	Item	Designation	#
1	Inhabitants		4	Migrant community? (No=0, Yes=1)	
2	compounds		5	When was community established?	
3	Households				

## B. Natural Capital

Item	Designation	Nr.	Qualification/ Description
1	Natural resources other than mining land: 1=farm land, 2=timber for firewood, 3=timber for construction, 4=grazing land, 5= fish, 6=wildlife, 7= other		
2	Access to <i>clean</i> drinking water (No=0, Yes=1)		
3	Presence and distance to national park or other protected areas		
4	Land that for spiritual/religious reasons has particular cultural value, such as sacred coves, burial grounds, etc. (# ha) (do not include mosques or churches)		
5	Conflicts over natural resources (e.g. land, water) over the past five years, including location and cause		
7	Number of individuals in the community owning mines		

8. Brief description of rules for resource allocation (e.g. traditional mine and land ownership):

<sup>14</sup> A compound is a cluster of households belonging to a larger extended family, which tend to partially or completely share food, labor and other resources. The houses in a compound are typically build around a central plaza and surrounded by a wall or other structure that separates them from other compounds in a community.

### C. Social Capital:

<i>Item</i>	<i>Designation</i>	<i>Nr.</i>	<i>Qualification/Description</i>
1	Community organizations such as youth clubs, women's groups, miner's associations, etc. Number and type.		
2	Public community centre (Number)		
3	Private community centre, e.g. video viewing space. (Number and type)		
4	Religious/worship houses, such as churches, mosques, temples, etc. (Number and type)		
5	Presence of informal savings and credit groups (Number)		
6	Presence of informal savings and credit groups for miners (Number)		
7	Type of community rulership (1=elected, 2=hereditary, 3=other)		
8	Government representatives in community (numbers of men and women and role)		
9	Traditional authorities / title holders (numbers of men and women and role)		
10	Decision making culture. 1=consensus, 2=democratic, 3=authoritative, 4=other		
11	Distance to the nearest police station (km)		
12	Number of crimes (e.g. assaults) that physically harmed or killed someone over the past year (Number by type)		
13	Number of reported crimes (e.g. thefts, robberies) without personal injuries over the past year		
14	How are small criminal offenses (e.g. theft) dealt with? 1= reported to the police, 2= resolved by a community council, 3 = resolved privately (e.g. at home or among miners), 4=other.		
15	How are serious criminal offenses (e.g. murder) dealt with? 1= reported to the police, 2= resolved by a community council, 3 = resolved privately (e.g. at home or among miners), 4=other.		

**Social capital, continued...**

10. Describe relations between traditional rulership and representatives of the national government

11. Describe work that men and women typically do in and around the house. E.g. who (most often) obtains water for household use, buys food, cooks, etc.?

12. Describe the work that men and women typically do outside the house. E.g. who does (most of the) farming, collecting firewood, etc.?

12. To what extent can women influence decisions that concern the household?

13. To what extent can women influence decisions that concern the community?

#### D. Financial Capital

<i>Item</i>	<i>Designation</i>	<i>Nr.</i>	<i>Qualification/Description</i>
1	Alternative sources of income in the community. (rank by importance)		
2	Value of food and other contributions to a large annual religious celebration in the community, such as Christmas for Christians or <i>Sallah</i> for Muslims.		
3	Interest rates of commercial banks For deposits For loans		
4	Typical loan requirements Guarantor Collateral		

2. Does mining support other jobs? For example, mining may allow a farmer to buy new seeds and to get through the slack agricultural season. Name examples:

3. Do other livelihood activities support mining? For example, income from informal trade, agriculture, and other sources may be used to buy mining equipment. Name examples:

### E. Human Capital

<i>Item</i>	<i>Designation</i>	<i>Nr.</i>	<i>Qualification/Description</i>
1	Distance to nearest primary school (km)		
2	Travel time to nearest primary school (hours:minutes)		
3	Distance to nearest Islamic school (km)		
4	Travel time to nearest Islamic school (hours:minutes)		
5	Access to (vocational) training. No=0 If yes, describe kind		
6	Travel time to nearest clinic (hours:minutes)		
7	Distance to nearest clinic (km)		
8	Health care providers (number of physicians and nurses)		
9	Traditional healers (Number and status)		
10	Main causes of death in the community, ranked by importance		
11	Child mortality (number of deceased children under 5 years of age per 1000)		
12	Percentage of households eating at least two meals a day.		
13	Main ethnic groups in community		
14	Main religious groups in community		

**Human capital, continued...**

*Questions for head master, school teachers, and/or religious school teacher (e.g. priest or imam):*

<i>Item</i>	<i>Designation</i>	<i>Nr.</i>	<i>Qualification/Description</i>
15	Number of school teachers at local primary school		
16	Number of school teachers at local Islamic school		
17	Percentage of community boys ages 6-12 enrolled in primary school		
18	Percentage of community girls ages 6-12 enrolled in primary school		
19	Percentage of community boys ages 6-12 enrolled in Islamic school		
20	Percentage of community girls ages 6-12 enrolled in Islamic school		
21	Percentage of community boys entering class 1 finishing elementary school		
22	Percentage of community girls entering class 1 finishing elementary school		

23. Describe quality of educational facilities such as teachers and physical structures. For examples: does the school have tables and chairs for teachers and pupils? Are teachers certified?

*Questions for local health care providers:*

<i>Item</i>	<i>Designation</i>	<i>Nr.</i>	<i>Qualification/Description</i>
24	Percentage of local people having died of AIDS over the past five years		
25	Percentage of local people infected with HIV		
26	Main threats to public health in the local communities it serves.		
27	Signs of malnutrition in local children		
28	Prevalence of malnutrition (% children)		

## F. Physical Capital

<i>Item</i>	<i>Designation</i>	<i>Nr.</i>	<i>Qualification/Description</i>
1	Road access for motorized vehicles (No= 0; Yes=1)		
2	Community access to postal services, 0=None, 1=Poor quality, 2=Good		
3	Type of waste management/sewage system, None/Individual=0, 1=Community-based system, etc.		
4	Community access to telephone network (No= 0; Yes=1)		

5. Describe access to, and quality of, public services and infrastructure:

## G. Needs assessment

1. What are in the eyes of men the main problems in the community?

2. What are in the eyes of women the main problems in the community?

3. What are in the eyes of young adults the main problems in the community (ages 15-20)?

# COMMUNITY SURVEY TEMPLATE

(B)

## ASM SPECIFIC ISSUES

*General instructions:* Conduct one survey per community, interviewing key informants and conducting group interviews with gold miners and key figures in the local mining economy. **DO NOT LEAVE ANY ANSWERING SPACES OPEN.** If the answer is “No”, “None”, or “Zero”, write down “0” (zero). If you did not obtain an answer, place a horizontal dash in the recording space. Make a note when the data is unavailable, likely to be distorted, or for other reasons not accurate.

Project name: _____		
Project sponsor: _____		
Implementing institution: _____		
Local project director: _____		
Research coordinator: _____		
Country: _____	State: _____	District: _____
Village name: _____	Interviewee: _____	
Village ID: _____	Date & Time: _____	

Observations:

**A. General**

<i>Item</i>	<i>Designation</i>	<i>Nr.</i>	<i>Qualification/Description</i>
1	Total number of active mining units/ co-operatives		
2	Number of tributers		
3	Total number of people working in the mining pits or mines		
4	Total number of people working the mining tailings or area around the pits		
5	Total number of people providing services (e.g. selling food, water) to miners in the mines		
6	Total number of people providing services (e.g. selling food, water) to miners outside the mines		
7	Share of households with at least one member working in the mines (%)		

**B. Natural Capital**

<i>Item</i>	<i>Designation</i>	<i>Qualification/Description</i>
1	Distance of village to nearest mining area in km	
2	Mineral resources exploited by ASM	
3	Types of deposits exploited by ASM	
4	Average quality of the mineral resource (e.g. Gold: g/t, % of barite in the mine-product)	
5	Estimated average mineral's content left in tailings (e.g. Gold: g/t) <i>(not applicable for most of Industrial Minerals, etc.)</i>	
6	Non mineral natural resources used for mining & processing (Water, Firewood, etc.)	

**Comments:**

### C. Social Capital

<i>Item</i>	<i>Designation</i>	<i>Nr.</i>	<i>Qualification/Description</i>
1	Estimated % of mining work force consisting of women working full-time		
2	Estimated % of mining work force consisting of women working part-time		
3	Do women miners work together with men? (No=0; Yes=1)		
4	Jobs that women are most likely to do in and around the mines		
5	Jobs that women are least likely to do in and around the mines		

6. Cultural beliefs and practices that openly ban women from working in the mines (e.g. prohibition for women to enter underground mines, prohibitions from husbands)
  
7. Cultural beliefs and practices that hinder women's participation in mining in a less overt way (e.g. reputation, lack of child care facilities)

8	Estimated % of mining work force consisting of children below the age of 13 working full-time		
9	Estimated % of mining work force consisting of children below the age of 13 working part-time		
10	Do child miners work together with adults? (No=0; Yes=1)		
11	Jobs that children under the age of 13 are most likely to do in the mines		
12	Jobs that children under the age of 13 are least likely to do in the mines		

**Social capital, continued...**

13	When did the first migrant miners come to work here?		
14	Does the area continue to attract new miners? (No=0; Yes=1)		
15	If miners are seasonal, how many months per year do they stay?		
16	What proportion of migrant miners expects to eventually return to their home communities? 0=None; 1=Very few; 2= 25%; 3=At least half; 4=Majority; 5=All		
17	Estimated share of income that migrants send to their home communities.		

18. Observations on self-organization among male, female, and child miners. Why do miners decide to work either alone or in a group? How stable are these groups?

**D. Financial Capital**

<i>Item</i>	<i>Designation</i>	<i>Nr.</i>	<i>Qualification/Description</i>
1	Who buys the minerals (gold, barite, gypsum, etc. ) from miners?		
2	Number of buyers in the community.		
3	Who buys from local buyers?		
4	Price paid by local buyer to miners for the mineral		
5	Price paid by larger (regional?) buyer to local buyer		
6	How do miners know about the current price? 1=local buyers, 2=newspaper, 3=radio, 4=family or friends elsewhere, 5=other source		
7	How does local buyer determine his price? 1=regional buyers, 2=newspaper, 3=radio, 4=family or friends elsewhere, 5=other source		
8	Average amount of minerals bought by local buyers (tons, gram/week)		

**E. Human Capital**

<i>Item</i>	<i>Designation</i>	<i>Qualification/Description</i>
1	<b>ASM Training/Awareness Programs undertaken in the community:</b>	
A	What kind of training ? <ul style="list-style-type: none"> <li>○ Mining &amp; Processing,</li> <li>○ Management &amp; Marketing</li> <li>○ Health &amp; Safety</li> <li>○ Environmental Awareness</li> <li>○ Others (Gender, HIV, etc.)</li> </ul>	
B	By whom ? (Government, NGO, university, donor organization, etc.)	
c	When ?	
D	Target group	
E	Percentage of currently active miners attended the program (% male/female)	
2	<b>Other ASM-Programs undertaken in the area: (What, When, By Whom?)</b>	

**Comments:**

**F. Physical Capital**

<i>Item</i>	<i>Designation</i>	<i>Qualification/Description</i>	
1	Useable mining infrastructure & equipment left behind by former/dormant mining companies/activities		
2	Privately owned infrastructure/ machinery/ equipment to be used by miners against a fee (e.g. Custom ore milling facilities)		
3	Costs of mining equipment –minimal and typical		
4	Safety gear and protective measures used by local miners. 0=None, 1=hand kerchief to prevent inhalation of dust, 2= helmets, 3=other		

5. Brief description of most commonly used ASM methods and degree of mechanization.

# HOUSEHOLD SURVEY PROTOCOL TEMPLATE

(C)

## FOR BASELINE DATA ON ARTISANAL AND SMALL-SCALE MINING COMMUNITIES

*General instructions:* Conduct one survey per household, interviewing one or both heads of households. Keep the amount of recorded text to a minimum. Instead use coding to facilitate and standardize data entry and analysis. **DO NOT LEAVE ANY ANSWERING SPACES OPEN.** If the answer is “No”, “None”, or “Zero”, write down “0” (zero). If you did not obtain an answer, place a horizontal dash in the recording space. Place a “?” when the interviewee does not know the answer. Make a note when the person refuses to answer a question or is likely to have provided false or incomplete information.

Household ID

H				
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Project name: _____		
Project sponsor: _____		
Implementing institution: _____		
Local project director: _____		
Research coordinator: _____		
Country: _____	State: _____	District: _____
Village name: _____	Interviewee: _____	
Village ID: _____	Date & Time: _____	

Observations:

## 0. Introductions

Introduce researcher(s). Explain purpose of the study; why are we here. What will local people get out of participation, if anything? Explain the interviewee his or her rights (participation is voluntary). Explain that the information will be treated confidentially; the interviewee's identity will not be revealed. Obtain informed consent.

Comments (e.g. reaction of interviewee; suspicion, interest, etc):

## A. House

These data can be recorded either prior to or after the interview.

Item	Designation	
1	Roof, 0= thatch, 1= tin plate or sheet metal, 2=mud, 3=other	
2	Floor, 0=mud, 1-cement, 2= other	
3	Outside wall of the house; 0=grass, 1= wood, 2=mud, 3=cement, 4=bricks	
4	Household receives electricity (Yes/No)	
5	Household has access to potable water in the home (Yes/No)	
6	Quality of toilet facilities, 0=none, 1=pit latrine, 2= flush toilet, 3= other	
7	Household has a telephone (Yes/No)	

## B. Personal Data – Head(s) of household.

These data will be recorded for both the male and female head of household, if applicable. The male head of household is the man who owns the house and/or has a say in household decisions and/or contributes most to household income and consumption. The female head(s) of household is(are) his wife(s). Person ID (H000000) = Village ID(00) + Household ID (00) + Personal ID (00).

Item	Designation	Male HH
1	Person ID (H000000)	
2	Name (in order to find the person back next year)	
3	Ethnic group	
4	Birth village	
5	Local Government Area (LGA) where person was born	
6	State where person was born	
7	Length of time living in mining village (# years)	
8	0 = temporary resident; 1 = year-round resident	
9	Number of children	
10	Native language (0= English, 1=Hausa, 2=Yoruba, 3 = Igbo, 4=other)	
11	Speak English (Yes/No)	
12	Can read and write in English (Yes/No)	
13	Can read Arabic (Yes/No)	
14	Religion (1=Traditional, 2=Christian, 3=Muslim, 4=Other)	
15	Service provider? (Yes/No)	
16	Miner? (Yes/No)	

<i>Item</i>	<i>Designation</i>	1st wife
1	Person ID (H000000)	
2	Name (in order to find the person back next year)	
3	Ethnic group	
4	Birth village	
5	Local Government Area (LGA) where person was born	
6	State where person was born	
7	Length of time living in mining village (# years)	
8	0 = temporary resident; 1 = year-round resident	
9	Number of children	
10	Native language (0= English, 1=Hausa, 2=Yoruba, 3 = Igbo, 4=other)	
11	Speak English (Yes/No)	
12	Can read and write in English (Yes/No)	
13	Can read Arabic (Yes/No)	
14	Religion (1=Traditional, 2=Christian, 3=Muslim, 4=Other)	
15	Service provider? (Yes/No)	
16	Miner? (Yes/No)	

<i>Item</i>	<i>Designation</i>	2nd wife
1	Person ID (H000000)	
2	Name (in order to find the person back next year)	
3	Ethnic group	
4	Birth village	
5	Local Government Area (LGA) where person was born	
6	State where person was born	
7	Length of time living in mining village (# years)	
8	0 = temporary resident; 1 = year-round resident	
9	Number of children	
10	Native language (0= English, 1=Hausa, 2=Yoruba, 3 = Igbo, 4=other)	
11	Speak English (Yes/No)	
12	Can read and write in English (Yes/No)	
13	Can read Arabic (Yes/No)	
14	Religion (1=Traditional, 2=Christian, 3=Muslim, 4=Other)	
15	Service provider? (Yes/No)	
16	Miner? (Yes/No)	

<i>Item</i>	<i>Designation</i>	3rd wife
1	Person ID (H000000)	
2	Name (in order to find the person back next year)	
3	Ethnic group	
4	Birth village	
5	Local Government Area (LGA) where person was born	
6	State where person was born	
7	Length of time living in mining village (# years)	
8	0 = temporary resident; 1 = year-round resident	
9	Number of children	
10	Native language (0= English, 1=Hausa, 2=Yoruba, 3 = Igbo, 4=other)	
11	Speak English (Yes/No)	
12	Can read and write in English (Yes/No)	
13	Can read Arabic (Yes/No)	
14	Religion (1=Traditional, 2=Christian, 3=Muslim, 4=Other)	
15	Service provider? (Yes/No)	
16	Miner? (Yes/No)	

**C. Household Composition**

1. List all people – kin and non-kin- who regularly share food, the house, and/or income with the heads of household AND who do not form a separate household. In the case of doubt as to whether someone belongs to the household, include the person if he/she sleeps in the same house. In column 4 record all that apply: a=subsistence farmer, b=commercial farmer, c= miner, d=wage laborer, e=store owner, f= informal trade, g=student, h= public/government job, i= does not study or work for income.

	1	2	3	4	5	6	7
Person	Personal ID (H000000)	Age (Yr)	Sex (1=M,0=F)	Occupation a-i	Education (Highest class)	Islamic education, # years	Name
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

2. Number of school aged children (6-12) not attending school:

3. Household shares a compound with ..... other households. Record household ID numbers if they are being part of the survey:

## D. Financial capital

### D.1. Cash income from work

In Table D1., record how much each of the household income earners has earned in the previous year in each *wage labor or other cash-paying job* he or she has performed during this period. Be specific in the case of ASM-related jobs. That is, do not just record whether the person is a miner, but also whether he/she is a mine worker, gang leader, shift boss, license holder, property owner, and so forth.

<i>Person ID</i>	<i>Activity</i>	<i>Income Naira</i>	<i>Income US\$</i>

### D.2. Non-cash income

In Table D3., estimate each household member's production from subsistence activities such as agriculture, hunting, and fishing, which was not sold for cash (over the previous year). Quantities can later be translated to cash values in Naira (and US\$) based on village-level prices.

<i>Person ID</i>	<i>Product</i>	<i>Amount</i>	<i>Value in Naira (US\$)</i>

### D.3. Income from the sale of goods

In table D.2. record whether household members received cash from selling valuables such as livestock (goats, cows) or jewelry, over the previous year.

<i>Person ID</i>	<i>Commodity sold</i>	<i>Income Naira</i>	<i>Income US\$</i>

### D4. Income from gifts at ceremonies and other occasions

How much has the household received over the past year in gifts related to:

<i>Event</i>	<i>Number of events</i>	<i>Value in Naira (US\$)</i>
1. Marriage		
2. Birth		
3. Burial		
4. Other, namely.....		

**D.5. Estimated value of household expenditures over the past year on:**

People will not recall their expenditures for food items over an extensive period. Ask what the person spends on a typical day (or yesterday and the day before) on food, and multiply the figure. Larger purchases are more likely to be remembered accurately.

<i>Item</i>	<i>Naira</i>	<i>US\$</i>
Daily food purchases (vegetables, milk, bread, sugar, etc)		
Bulk foods (rice, grains, etc)		
Luxury foods (e.g. canned fish and meat, coffee, tea, sweets)		
Clothing		
Shoes		
Home improvement		
Household items (e.g. kitchen utensils, furniture)		
Education (school fees, books)		
Marriages, births, and burials		
Selected religious celebrations		
Other		
TOTAL		

**D.6. Religious donations**

Value of the household's annual donations to (a) specific religious event(s) or institution and to charity. For example, in Muslim communities one can ask about the household's last *Zakkat* payments for:

1. Savings (monetary amount)	
2. Agriculture (# bags of grain)	
3. Livestock (Number of animals by type)	
4. Other	

**D.7. Accumulated wealth and savings**

The following questions ask about goods and other possessions owned by all household members over the age of 16, without consideration of the size, state, or quality, as long as they are useable. If the exact amount is unknown, record + for ownership >0.

<i>Item</i>	<i>Total owned by hh members</i>
1. Farm land	(in ha)
2. Livestock (number by type)	
3. Poultry	
4. Radio	
5. Television	
6. Refrigerator	
7. Car	
8. Two-wheeler (Bicycle, Moped, motor bike)	
9. Bags of grains in storage	
10. Houses	
11. Household has bank account (0=No, 1=Yes)	

**E. Health**

1. Over the past two weeks, how many days have you and other household members (all adults and children) needed medical attention or been ill? 'Illness' includes all conditions that hinder a person's optimal health or labor capacity, including being bedridden due to child birth, head-aches, injuries, and diseases. In column 4 record: 0 = nothing; 1 = self medication; 2 = modern doctor, 3 = traditional healer.

1	2	3	4
PersID	Days ill	Days in bed	Treatment
H000000	#	#	0-3

2. Cumulative number of days in the past two weeks one of the household heads had to stay home with a sick family member (child, elder parent):

3. Number of main meals eaten per day (circle):            1            2            3

4. *If appropriate anthropometric (physical) measures or observations exist that can be recorded as an indicator of child malnutrition (e.g. height for age, weight for age) they may be inserted here. Visit the nearest clinic to learn about the best way to measure child malnutrition in the communities involved.*

**F. Social structures and capital**

**F.1. Community based organization**

Is any-one in the household member of a community-based organization (incl. savings and credit groups)?

	1	2
	Person id	Type of organization
	H000000	
1		
2		
3		
4		
5		

Describe organizations if not obvious:

**F.2. Occupation-based organization**

Is any-one in the household member of an occupation-based organization?

	1	2
	Person id H000000	Type of organization (Describe)
1		
2		
3		

Describe organizations if not obvious:

**J. Conclude.** We want to thank you for your time and help. This has been very important to us.

# MINING UNIT SURVEY TEMPLATE

(D)

## FOR BASELINE DATA ON ARTISANAL AND SMALL-SCALE MINING COMMUNITIES

*General instructions:* Conduct one survey per mining unit. We consider one mine unit as any individual or group of people who carry out ASM activities and are sharing a resource and production (e.g. a mine can be owned by one miner who employs others, or a group of miners work as a co-operative etc.)

Keep the amount of recorded text to a minimum. Instead use coding to facilitate and standardize data entry and analysis. **DO NOT LEAVE ANY ANSWERING SPACES OPEN.** If the answer is “No”, “None”, or “Zero”, write down “0” (zero). If you did not obtain an answer, place a horizontal dash in the recording space. Make a note when the data is unavailable, likely to be distorted, or for other reasons not accurate.

Mine ID

M				
---	--	--	--	--

Project name: _____		
Project sponsor: _____		
Implementing institution: _____		
Local project director: _____		
Research coordinator: _____		
Country: _____	State: _____	District: _____
Village name: _____	Interviewee: _____	
Village ID: _____	Date & Time: _____	

Observations:

## 0. Introductions

Introduce researcher(s). Explain purpose of the study; why are we here. What will local miners get out of participation, if anything? Explain the interviewee his or her rights (participation is voluntary) Explain that the information will be treated confidentially& anonymously; the interviewee's identity will not be revealed. Obtain informed consent.

Comments (e.g. reaction of interviewee; suspicion, interest, etc):

### A. The Mine

Mineral(s) mined:

1	Number of persons in the group/co-operative	
2	License (Yes=1; No=0)	

### B. Production

1	Total current production per week (gram of gold / tons of minerals, etc.)	
2	Estimated number of weeks production per year	
3	Estimated total current production per year (gram of gold / tons of minerals, etc)	
4	Price per g / tons (Naira)	
5	Estimated total income from production sales / year (Naira)	
6	Estimated production expenses for tools and materials/ year (Naira)	
7	Estimated net profit from mining/ team / year (Naira)	

### C. Equipment, Machinery, Materials, and Services (1=used; 0=not used)

1	Pick-axe	
2	Shovel	
3	Pan	
4	Pounder and mortar	
5	Sluice Box	
6	Timber to support shaft	
7	Mercury	
8	Cyanide	
9	External custom Milling Facility	
10	Manual ore-grinder	
11	Transport service for ore (e.g. carriers)	
12	Drilling Equipment & Blasting	
13	Water Pump	
14	Other, namely:	
15	Other, namely:	

**D. Mining Team Composition**

List all people – kin and non-kin- who regularly work in the mine/Group/Co-operative

- 1= Mine owner,
- 2= Financer
- 3= Tributer
- 4= Full member of the group/co-operative,
- 5= Employee,
- 6= Self-employed service provider,
- 7= Unpaid family member,

	1	2	3	4	5	6
	Personal ID (000000)	Sex (1=M,0=F)	Status in the pit 1-7	Year of mining experience	age	Estimated income (Naira/year)
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

2. Describe how the income from the mines is shared within the group.

3. What do miners see as their main problems at the moment?

4. What kinds of support would miners like from the government; what services are they most desperately lacking?

### E. Data on individual Miners

These data will be recorded for both the male and female miners. Use one table for each miner in the group. Preferably each individual miner should answer the question about him or herself. In his/her absence, however, try to find an informed colleague to provide the data.

Person ID (M000000) = Village ID(00) + Mine ID (00) + Personal ID (00).

1	Person ID (M000000)	
2	Name (in order to find the person back next year)	
3	Nationality(1=Nigerian, 2=Mali, 3=Ghana, 4=Niger, 5=other)	
4	Ethnic group	
5	What place do you call your home town	
6	Length of time living in mining community (# years)	
7	0 = temporary resident; 1 = year-round resident	
8	Number of wives	
9	Number of children	
10	Native language (1=Hausa, 2=Yoruba, 3 = Igbo, 4=Others)	
11	Western education (highest class achieved)	
12	Islamic education (number of years)	
13	Speak English? (0=No, 1=Yes)	
14	Can read English? (0=No, 1=Yes)	
15	Can read Arabic? (0=No, 1=Yes)	
16	Religion (1=Traditional, 2=Christian, 3=Muslim, 4=Others)	
17	Member of a miners' association?	
18	Number and type of injuries from mining over the past year	
19	Lost working days due to mining related health problems over past year	
20	Use of capacity enhancing drugs (e.g. amphetamines) at least once a week (No=0; Yes=1)	
21	Use of pain relievers (e.g. Paracetamol) at least once a week (No=0; Yes=1)	
22	Marihuana consumption (No=0; Yes=1)	

1	Person ID (M000000)	
2	Name (in order to find the person back next year)	
3	Nationality(1=Nigerian, 2=Mali, 3=Ghana, 4=Niger, 5=other)	
4	Ethnic group	
5	What place do you call your home town	
6	Length of time living in mining community (# years)	
7	0 = temporary resident; 1 = year-round resident	
8	Number of wives	
9	Number of children	
10	Native language (1=Hausa, 2=Yoruba, 3 = Igbo, 4=Others)	
11	Western education (highest class achieved)	
12	Islamic education (number of years)	
13	Speak English? (0=No, 1=Yes)	
14	Can read English? (0=No, 1=Yes)	
15	Can read Arabic? (0=No, 1=Yes)	
16	Religion (1=Traditional, 2=Christian, 3=Muslim, 4=Others)	
17	Member of a miners' association?	
18	Number and type of injuries from mining over the past year	
19	Lost working days due to mining related health problems over past year	
20	Use of capacity enhancing drugs (e.g. amphetamines) at least once a week (No=0; Yes=1)	
21	Use of pain relievers (e.g. Paracetamol) at least once a week (No=0; Yes=1)	
22	Marihuana consumption (No=0; Yes=1)	
1	Person ID (M000000)	
2	Name (in order to find the person back next year)	
3	Nationality(1=Nigerian, 2=Mali, 3=Ghana, 4=Niger, 5=other)	
4	Ethnic group	
5	What place do you call your home town	
6	Length of time living in mining community (# years)	

7	<i>0 = temporary resident; 1 = year-round resident</i>	
8	<i>Number of wives</i>	
9	<i>Number of children</i>	
10	<i>Native language (1=Hausa, 2=Yoruba, 3 = Igbo, 4=Others)</i>	
11	<i>Western education (highest class achieved)</i>	
12	<i>Islamic education (number of years)</i>	
13	<i>Speak English? (0=No, 1=Yes)</i>	
14	<i>Can read English? (0=No, 1=Yes)</i>	
15	<i>Can read Arabic? (0=No, 1=Yes)</i>	
16	<i>Religion (1=Traditional, 2=Christian, 3=Muslim, 4=Others)</i>	
17	<i>Member of a miners' association?</i>	
18	<i>Number and type of injuries from mining over the past year</i>	
19	<i>Lost working days due to mining related health problems over past year</i>	
20	<i>Use of capacity enhancing drugs (e.g. amphetamines) at least once a week (No=0; Yes=1)</i>	
21	<i>Use of pain relievers (e.g. Paracetamol) at least once a week (No=0; Yes=1)</i>	
22	<i>Marihuana consumption (No=0; Yes=1)</i>	

1	<i>Person ID (M000000)</i>	
2	<i>Name (in order to find the person back next year)</i>	
3	<i>Nationality(1=Nigerian, 2=Mali, 3=Ghana, 4=Niger, 5=other)</i>	
4	<i>Ethnic group</i>	
5	<i>What place do you call your home town</i>	
6	<i>Length of time living in mining community (# years)</i>	
7	<i>0 = temporary resident; 1 = year-round resident</i>	
8	<i>Number of wives</i>	
9	<i>Number of children</i>	
10	<i>Native language (1=Hausa, 2=Yoruba, 3 = Igbo, 4=Others)</i>	
11	<i>Western education (highest class achieved)</i>	
12	<i>Islamic education (number of years)</i>	
13	<i>Speak English? (0=No, 1=Yes)</i>	
14	<i>Can read English? (0=No, 1=Yes)</i>	
15	<i>Can read Arabic? (0=No, 1=Yes)</i>	
16	<i>Religion (1=Traditional, 2=Christian, 3=Muslim, 4=Others)</i>	
17	<i>Member of a miners' association?</i>	
18	<i>Number and type of injuries from mining over the past year</i>	
19	<i>Lost working days due to mining related health problems over past year</i>	
20	<i>Use of capacity enhancing drugs (e.g. amphetamines) at least once a week (No=0; Yes=1)</i>	
21	<i>Use of pain relievers (e.g. Paracetamol) at least once a week (No=0; Yes=1)</i>	
22	<i>Marihuana consumption (No=0; Yes=1)</i>	

1	Person ID (M000000)	
2	Name (in order to find the person back next year)	
3	Nationality(1=Nigerian, 2=Mali, 3=Ghana, 4=Niger, 5=other)	
4	Ethnic group	
5	What place do you call your home town	
6	Length of time living in mining community (# years)	
7	0 = temporary resident; 1 = year-round resident	
8	Number of wives	
9	Number of children	
10	Native language (1=Hausa, 2=Yoruba, 3 = Igbo, 4=Others)	
11	Western education (highest class achieved)	
12	Islamic education (number of years)	
13	Speak English? (0=No, 1=Yes)	
14	Can read English? (0=No, 1=Yes)	
15	Can read Arabic? (0=No, 1=Yes)	
16	Religion (1=Traditional, 2=Christian, 3=Muslim, 4=Others)	
17	Member of a miners' association?	
18	Number and type of injuries from mining over the past year	
19	Lost working days due to mining related health problems over past year	
20	Use of capacity enhancing drugs (e.g. amphetamines) at least once a week (No=0; Yes=1)	
21	Use of pain relievers (e.g. Paracetamol) at least once a week (No=0; Yes=1)	
22	Marihuana consumption (No=0; Yes=1)	

1	Person ID (M000000)	
2	Name (in order to find the person back next year)	
3	Nationality(1=Nigerian, 2=Mali, 3=Ghana, 4=Niger, 5=other)	
4	Ethnic group	
5	What place do you call your home town	
6	Length of time living in mining community (# years)	
7	0 = temporary resident; 1 = year-round resident	
8	Number of wives	
9	Number of children	
10	Native language (1=Hausa, 2=Yoruba, 3 = Igbo, 4=Others)	
11	Western education (highest class achieved)	
12	Islamic education (number of years)	
13	Speak English? (0=No, 1=Yes)	
14	Can read English? (0=No, 1=Yes)	
15	Can read Arabic? (0=No, 1=Yes)	
16	Religion (1=Traditional, 2=Christian, 3=Muslim, 4=Others)	
17	Member of a miners' association?	
18	Number and type of injuries from mining over the past year	
19	Lost working days due to mining related health problems over past year	
20	Use of capacity enhancing drugs (e.g. amphetamines) at least once a week (No=0; Yes=1)	
21	Use of pain relievers (e.g. Paracetamol) at least once a week (No=0; Yes=1)	
22	Marihuana consumption (No=0; Yes=1)	

1	Person ID (M000000)	
2	Name (in order to find the person back next year)	
3	Nationality(1=Nigerian, 2=Mali, 3=Ghana, 4=Niger, 5=other)	
4	Ethnic group	
5	What place do you call your home town	
6	Length of time living in mining community (# years)	
7	0 = temporary resident; 1 = year-round resident	
8	Number of wives	
9	Number of children	
10	Native language (1=Hausa, 2=Yoruba, 3 = Igbo, 4=Others)	
11	Western education (highest class achieved)	
12	Islamic education (number of years)	
13	Speak English? (0=No, 1=Yes)	
14	Can read English? (0=No, 1=Yes)	
15	Can read Arabic? (0=No, 1=Yes)	
16	Religion (1=Traditional, 2=Christian, 3=Muslim, 4=Others)	
17	Member of a miners' association?	
18	Number and type of injuries from mining over the past year	
19	Lost working days due to mining related health problems over past year	
20	Use of capacity enhancing drugs (e.g. amphetamines) at least once a week (No=0; Yes=1)	
21	Use of pain relievers (e.g. Paracetamol) at least once a week (No=0; Yes=1)	
22	Marihuana consumption (No=0; Yes=1)	

1	Person ID (M000000)	
2	Name (in order to find the person back next year)	
3	Nationality(1=Nigerian, 2=Mali, 3=Ghana, 4=Niger, 5=other)	
4	Ethnic group	
5	What place do you call your home town	
6	Length of time living in mining community (# years)	
7	0 = temporary resident; 1 = year-round resident	
8	Number of wives	
9	Number of children	
10	Native language (1=Hausa, 2=Yoruba, 3 = Igbo, 4=Others)	
11	Western education (highest class achieved)	
12	Islamic education (number of years)	
13	Speak English? (0=No, 1=Yes)	
14	Can read English? (0=No, 1=Yes)	
15	Can read Arabic? (0=No, 1=Yes)	
16	Religion (1=Traditional, 2=Christian, 3=Muslim, 4=Others)	
17	Member of a miners' association?	
18	Number and type of injuries from mining over the past year	
19	Lost working days due to mining related health problems over past year	
20	Use of capacity enhancing drugs (e.g. amphetamines) at least once a week (No=0; Yes=1)	
21	Use of pain relievers (e.g. Paracetamol) at least once a week (No=0; Yes=1)	
22	Marihuana consumption (No=0; Yes=1)	

1	Person ID (M000000)	
2	Name (in order to find the person back next year)	
3	Nationality(1=Nigerian, 2=Mali, 3=Ghana, 4=Niger, 5=other)	
4	Ethnic group	
5	What place do you call your home town	
6	Length of time living in mining community (# years)	
7	0 = temporary resident; 1 = year-round resident	
8	Number of wives	
9	Number of children	
10	Native language (1=Hausa, 2=Yoruba, 3 = Igbo, 4=Others)	
11	Western education (highest class achieved)	
12	Islamic education (number of years)	
13	Speak English? (0=No, 1=Yes)	
14	Can read English? (0=No, 1=Yes)	
15	Can read Arabic? (0=No, 1=Yes)	
16	Religion (1=Traditional, 2=Christian, 3=Muslim, 4=Others)	
17	Member of a miners' association?	
18	Number and type of injuries from mining over the past year	
19	Lost working days due to mining related health problems over past year	
20	Use of capacity enhancing drugs (e.g. amphetamines) at least once a week (No=0; Yes=1)	
21	Use of pain relievers (e.g. Paracetamol) at least once a week (No=0; Yes=1)	
22	Marihuana consumption (No=0; Yes=1)	

1	Person ID (M000000)	
2	Name (in order to find the person back next year)	
3	Nationality(1=Nigerian, 2=Mali, 3=Ghana, 4=Niger, 5=other)	
4	Ethnic group	
5	What place do you call your home town	
6	Length of time living in mining community (# years)	
7	0 = temporary resident; 1 = year-round resident	
8	Number of wives	
9	Number of children	
10	Native language (1=Hausa, 2=Yoruba, 3 = Igbo, 4=Others)	
11	Western education (highest class achieved)	
12	Islamic education (number of years)	
13	Speak English? (0=No, 1=Yes)	
14	Can read English? (0=No, 1=Yes)	
15	Can read Arabic? (0=No, 1=Yes)	
16	Religion (1=Traditional, 2=Christian, 3=Muslim, 4=Others)	
17	Member of a miners' association?	
18	Number and type of injuries from mining over the past year	
19	Lost working days due to mining related health problems over past year	
20	Use of capacity enhancing drugs (e.g. amphetamines) at least once a week (No=0; Yes=1)	
21	Use of pain relievers (e.g. Paracetamol) at least once a week (No=0; Yes=1)	
22	Marihuana consumption (No=0; Yes=1)	

**ASM RELATED SERVICE PROVIDER UNIT  
SURVEY TEMPLATE**

**(E)**

**FOR BASELINE DATA ON ARTISANAL AND SMALL-SCALE MINING  
COMMUNITIES**

*General instructions:* We consider an ASM service provider unit as any individual or group of people who deliver(s) a service that is directly catered to miners. This service may be part of the mineral production chain by supporting the exploitation and processing of ore (e.g. millers, pounders, transporters of ore and water). Services also include activities that are part of the local marketing chain (e.g. buyers) and economy (e.g. food vendors, merchants, sex workers)

Keep the amount of recorded text to a minimum. Instead use coding to facilitate and standardize data entry and analysis. **DO NOT LEAVE ANY ANSWERING SPACES OPEN.** If the answer is “No”, “None”, or “Zero”, write down “0” (zero). If you did not obtain an answer, place a horizontal dash in the recording space. Make a note when the data is unavailable, likely to be distorted, or for other reasons not accurate.

SP ID

S				
---	--	--	--	--

Service Provided: .....

Project name: _____		
Project sponsor: _____		
Implementing institution: _____		
Local project director: _____		
Research coordinator: _____		
Country: _____	State: _____	District: _____
Village name: _____	Interviewee: _____	
Village ID: _____	Date & Time: _____	

Observations:

## 0. Introductions

Introduce researcher(s). Explain purpose of the study; why are we here. What will local miners get out of participation, if anything? Explain the interviewee his or her rights (participation is voluntary) Explain that the information will be treated confidentially; the interviewee's identity will not be revealed. Obtain informed consent.

### A. The service provider

1	Kind of service provider	
2	Provides this service to how many mines.	
3	Equipment and/or material used 1=manual pounder, 2=mechanized mill, 3=chemicals, 4=axe, 5=chainsaw, 6=bike, 7=motorbike, 8=motor vehicle/small truck, 9=large truck, 10= wheelbarrow, 11=drilling, 12=blasting, 13=pan, 14= general toolkit; 15=others, namely:	
4	This equipment is (0) personally owned, (1) borrowed, (2) rented	
5	Location. 0=person goes around to deliver service, 1=person delivers the service from a shed/structure in the mining area, 2=person delivers service from home, 3=a combination of any of the above, 4=other	
6	Value (in Naira) of equipment and/or material used for service	
7	Number of people working in his/her group	
8	Total net income per week (Naira)	
9	Estimated total net income per year	
10	How are earnings shared among group members?	
11	License (yes=1; no=0)	

### B. Team Composition

List all people – kin and non-kin- who regularly work in the Group/Co-operative

1= company owner,

2= Financer

3= Full member of the group/co-operative,

4= Employee,

5= Unpaid family member,

	1	2	3	4	5	6
	Personal ID (000000)	Sex (1=M,0=F)	Status in the group 1-5	Year of experience	age	Estimated income (Naira/year)
1						
2						
3						
4						
5						
6						
7						

**C. Needs assessment**

1. What do the service providers see as the main problem hindering their business at the moment?

**D. Personal data individual service providers**

Use one table for each male and female service provider. Person ID (S000000) = S + Village ID(00) + Mine ID (00) + Personal ID (00).

1	Person ID (S000000)	
2	Name (in order to find the person back next year)	
3	Nationality(1=Nigerian, 2=Mali, 3=Ghana, 4=Niger, 5=other)	
4	Ethnic group	
5	What place do you call your home town	
6	Length of time living in mining community (# years)	
7	0 = temporary resident; 1 = year-round resident	
8	Number of wives	
9	Number of children	
10	Native language (1=Hausa, 2=Yoruba, 3 = Igbo, 4=Others)	
11	Western education (highest class achieved)	
12	Islamic education (number of years)	
13	Speak English? (0=No, 1=Yes)	
14	Can read English? (0=No, 1=Yes)	
15	Can read Arabic? (0=No, 1=Yes)	
16	Religion (1=Traditional, 2=Christian, 3=Muslim, 4=Others)	

1	Person ID (M000000)	
2	Name (in order to find the person back next year)	
3	Nationality(1=Nigerian, 2=Mali, 3=Ghana, 4=Niger, 5=other)	
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5	What place do you call your home town	
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8	Number of wives	
9	Number of children	
10	Native language (1=Hausa, 2=Yoruba, 3 = Igbo, 4=Others)	
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13	Speak English? (0=No, 1=Yes)	
14	Can read English? (0=No, 1=Yes)	
15	Can read Arabic? (0=No, 1=Yes)	
16	Religion (1=Traditional, 2=Christian, 3=Muslim, 4=Others)	

1	Person ID (M000000)	
2	Name (in order to find the person back next year)	
3	Nationality(1=Nigerian, 2=Mali, 3=Ghana, 4=Niger, 5=other)	

4	<i>Ethnic group</i>	
5	<i>What place do you call your home town</i>	
6	<i>Length of time living in mining community (# years)</i>	
7	<i>0 = temporary resident; 1 = year-round resident</i>	
8	<i>Number of wives</i>	
9	<i>Number of children</i>	
10	<i>Native language (1=Hausa, 2=Yoruba, 3 = Igbo, 4=Others)</i>	
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12	<i>Islamic education (number of years)</i>	
13	<i>Speak English? (0=No, 1=Yes)</i>	
14	<i>Can read English? (0=No, 1=Yes)</i>	
15	<i>Can read Arabic? (0=No, 1=Yes)</i>	
16	<i>Religion (1=Traditional, 2=Christian, 3=Muslim, 4=Others)</i>	

1	<i>Person ID (S000000)</i>	
2	<i>Name (in order to find the person back next year)</i>	
3	<i>Nationality(1=Nigerian, 2=Mali, 3=Ghana, 4=Niger, 5=other)</i>	
4	<i>Ethnic group</i>	
5	<i>What place do you call your home town</i>	
6	<i>Length of time living in mining community (# years)</i>	
7	<i>0 = temporary resident; 1 = year-round resident</i>	
8	<i>Number of wives</i>	
9	<i>Number of children</i>	
10	<i>Native language (1=Hausa, 2=Yoruba, 3 = Igbo, 4=Others)</i>	
11	<i>Western education (highest class achieved)</i>	
12	<i>Islamic education (number of years)</i>	
13	<i>Speak English? (0=No, 1=Yes)</i>	
14	<i>Can read English? (0=No, 1=Yes)</i>	
15	<i>Can read Arabic? (0=No, 1=Yes)</i>	
16	<i>Religion (1=Traditional, 2=Christian, 3=Muslim, 4=Others)</i>	

1	<i>Person ID (S000000)</i>	
2	<i>Name (in order to find the person back next year)</i>	
3	<i>Nationality(1=Nigerian, 2=Mali, 3=Ghana, 4=Niger, 5=other)</i>	
4	<i>Ethnic group</i>	
5	<i>What place do you call your home town</i>	
6	<i>Length of time living in mining community (# years)</i>	
7	<i>0 = temporary resident; 1 = year-round resident</i>	
8	<i>Number of wives</i>	
9	<i>Number of children</i>	
10	<i>Native language (1=Hausa, 2=Yoruba, 3 = Igbo, 4=Others)</i>	
11	<i>Western education (highest class achieved)</i>	
12	<i>Islamic education (number of years)</i>	
13	<i>Speak English? (0=No, 1=Yes)</i>	
14	<i>Can read English? (0=No, 1=Yes)</i>	
15	<i>Can read Arabic? (0=No, 1=Yes)</i>	
16	<i>Religion (1=Traditional, 2=Christian, 3=Muslim, 4=Others)</i>	

## WOMEN'S FOCUS GROUP TEMPLATE

(F)

*General instructions:* Gather a group of 6-10 diverse women from the community, preferably not from the same family. One may assemble such a group with the assistance of a local women's group. The focus group should be conducted by a team of at least two female researchers who are fluent in the local language. One researcher, the interviewer, asks questions and probes for complete answers. It also is her task to invite the participation of all women in the group. The second researcher records the answers and assists the first researcher where necessary. If possible, conduct the focus group without the presence of men. If men have to be present, ask them politely not to answer the questions for the women.

The interviewer should not ask the questions literally as they are stated on this form, but use language and phrasing that is sensitive to the cultural setting. For example, women following strict Islamic rules of conduct (Pudha) are often confined to their compound and not allowed to leave the house except with the permission of their husbands. Questions about social organization, work, education, and other life experiences should be asked in a way that takes these restrictions into account.

Project name: _____	
Project sponsor: _____	
Implementing institution: _____	
Local project director: _____	
Research coordinator: _____	
Country: _____	State: _____ District: _____
Village name: _____	Interviewee: <u>Women</u> (Nr: _____)
Village ID: _____	Date & Time: _____

**0. Introductions**

Introduce researcher(s). Explain purpose of the study; why are we here. What will local people get out of participation, if anything? Explain the interviewee his or her rights (participation is voluntary). Explain that the information will be treated confidentially; the interviewee’s identity will not be revealed. Obtain informed consent.

Comments (e.g. reaction of interviewee; suspicion, interest, etc):

**A. List of Participants**

Under “occupation” record all that apply: 1=subsistence farmer, 2=commercial farmer, 3=gold miner, 4=wage laborer, 5=store owner, 6= informal trade, 7=student, 8= public/government job, 9= does not study or work for income.

	Name	Age (Yr)	Occupation 1-9	Western education Highest class completed	Islamic education, # years completed
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

*Record the answers to the questions below on a separate sheet.*

## **B. Social organization**

1. How have women in the community organized themselves (e.g. *Adashi*, crafts workshops, self-help groups)? What is the purpose of the various groups in which women have organized?
2. Are all women in the community a member of these groups? What determines who is and who is not a member, or why do some women decide to join while others do not?
3. How is the leadership structure of these groups? Are the group leaders selected democratically or appointed (by what criterion)?

## **C. Gender roles in work**

4. Describe work that men and women typically do in and around the house. E.g. who (most often) obtains water for household use, buys food, cooks, etc.?
5. Describe the work that men and women typically do outside the house. E.g. who does (most of the) farming, collecting firewood, etc.?
6. What are the main forms of income generation for women in the community?

## **D. Power of decision-making**

7. To what extent can women influence decisions that concern the household?
  - a. Can women decide what happens to the household budget? For example, do women determine what food or clothing will be bought?
  - b. Do women have a say in family planning. That is, can they initiate discussion about, and practice, birth control?
  - c. To what extent are women free to decide about their productive life, e.g. what kind of work they do?
  - d. To what extent are women free to decide about their formation, e.g. whether or not they will attend adult education, Islamic school, vocational training?
  - e. What influence do women have on decisions concerning their children, e.g. whether or not to go to school?
8. To what extent can women influence decisions that concern the community?
  - a. Do women have a voice at community meetings, either by their physical presence or by prior or post consultation?
  - b. Do the various councils and leadership positions that govern the community have female representatives?
  - c. What is the role of female community leaders?

### **E. Education**

1. What percentage or share (e.g. more or less than half, almost nobody) of women in the community has completed primary school?
2. What percentage or share (e.g. more or less than half, almost nobody) of women in the community has attended or is attending Islamic school?
3. Do they see it as desirable or beneficial to have more education? Do they think their lives would have been different if they had been to school longer? What has prevented them from continuing education?
4. What type and degree of education do they desire for their daughters; and for their sons? What barriers prevent the achievement of this goal?

### **F. Women and Mining**

1. Are any of the women in the group involved in Artisanal mining? How many women in the community are involved in mining?
2. What is the community perception of female miners? How do they, as women, see women miners? (e.g. reputation, status)

*If women are not or hardly involved in mining:*

3. Why not? Do they not find mining a suitable profession for themselves; do they believe the work is too hard; are husbands preventing them from entering mining?
4. In general; why are so few women in the community mining? How are women miners different from other women? That is, what has allowed or motivated these women to enter mining?

*If women are involved:*

5. Why? Why have they chosen for this profession? Are most women mining seasonally or year-round; part-time or full-time?
6. How much can a woman earn in a day? What do they do with their earnings? How do women's mining earnings compare to those of their husbands? Are they used for different things?
7. Do women work together with men? Do women and men do the same jobs in the mining area? Is it different to work with other women or with men?

### **G. Needs assessment**

1. What are the main problems confronting women in the community.
2. If you could ask the government to change something in the community, what would it be?

# ENVIRONMENTAL ASSESSMENT TEMPLATE

(F)

*General instructions:* Conduct one survey per mine site. Where possible, take objective measures. In other cases provide detailed observations and estimates.

Project name: _____		
Project sponsor: _____		
Implementing institution: _____		
Local project director: _____		
Research coordinator: _____		
Country: _____	State: _____	District: _____
Village name: _____	Interviewee: _____	
Village ID: _____	Date & Time: _____	

### A. MINING METHODS: EQUIPMENT AND CHEMICALS

1. What types of equipment are used in mining? Describe manual tools (e.g. shovel, pick-ax), machinery (e.g. hydraulic machine, pump, backhoe excavator), and other devices (e.g. dynamite)
2. Do miners work with chemicals? If so, name:
3. If chemicals are used, are they used in a closed circuit? Can they leak into the environment?
4. Do miners use oil or diesel? Can it leak into the environment?
5. What measures are taken to protect people and the environment from chemicals and oil leakage?

## B. AIR

### B.1. Air pollution

1. How does the use of the listed equipment affect air quality (dust, exhaust) in and outside the mines?
2. How does use of the listed chemicals affect air quality in and outside the mines? For example, is mercury burned in the open air?
3. What are the main sites of point-source pollution? For example, are there areas where blasting, crushing, and processing takes place where air pollution is particularly severe?
4. Reported and observed health effects due to air pollution, such as silicosis, asthma, and mercury intoxication.
5. Do miners use gear to protect themselves from air pollution, such as mouth and nose caps? If so, describe. If not, why not?

### B.2. Noise

1. Does the mining cycle include activities or techniques that cause excessive noise, such as blasting or the use of compressed air hammers or hydraulic mining machines? Describe.
2. Do miners and community members experience health problems due to excessive noise from mining? Describe.
3. Is mining-related noise a nuisance to miners and community members? Why?
4. What can be done to diminish or eradicate observed air and noise problems?
5. Do miners use gear to protect themselves from excessive noise, such as ear plugs? If so, describe. If not, why not?

*Additional observations on the impact of mining on air quality:*

## C. LAND

### C.1. Land and vegetation

1. Total land area of the mine site
2. Natural land coverage before mining e.g. savanna, forest, wetlands.
3. Presence of economic trees, such as oil palm, citrus and other fruit trees, and commercial timber species.
4. Estimated size of area deforested or vegetation removed (km <sup>2</sup> /ha and % of community land)
5. Estimated size of area covered with pits (km <sup>2</sup> /ha and % of community land)
6. Do unprotected open pits present a risk to people or wildlife (e.g. as they may fall into them?). Describe injuries and fatalities if occurred in the past.
7. Proximity of mining or deforestation to vulnerable places such as protected areas, culturally important lands (e.g. burial grounds, prayer area), river and stream beds, and erosion sensitive hills.
8. What livelihood activities took place on the land before mining? (e.g. agriculture, hunting, fishing, firewood collection)
9. Have efforts been made to restore the land? Judge the success of previous restoration efforts. For example, if pits have been filled, how is the current vegetation cover as compared to what was there before?
10. Judgment of reversibility. How can land bodies and natural vegetation be restored or improved? Can the land be made suitable for agriculture, silviculture, or other uses?

## C.2. Wildlife

1. Describe original wildlife in the area.
2. Describe presence of home breeding of wild animal species, e.g. rearing bush pigs or snake farming (other than domesticated animals)
3. Do people hunt in the mining area and its vicinities? What animals?
4. Are these animals hunted for home consumption, the local market, or the regional market? Has mining increased demand for bush meat or ornamental species?
5. Do people catch (live) animals for wildlife trade, for example trade in ivory, singing birds, reptiles for collectors, and colorful feathers. Are these products sold at the local, domestic, or international market?
6. Are there any wildlife species that were frequently hunted/caught in the past but are now difficult to find or even locally extinct?
7. Effect of mining on wildlife population according to local people
8. Effect of mining on wildlife population according to researcher. E.g. Body mass, diversity, chemical pollution, etc.
6. Judgment of reversibility.
7. Suggestions for wildlife management.

*Additional observations of the impact of mining on land resources, including vegetation and wildlife:*

## D. WATER

### D.1. Rivers, streams, and wells

1. What types of natural water bodies does the area feature?
2. (How) is this water used in the mining production cycle? Describe for each water body, e.g. rivers, streams, and wells.
3. What happens to the water after it has been used? Is it discharged in streams or left in pits? Describe for each water body, e.g. rivers, streams, and wells.
4. Observations of water quality, e.g. color, smell, turbidity, flow, PH-levels, chemicals, etc. Where possible use instruments to provide objective measures. Describe for each water body, e.g. rivers, streams, and wells.
5. Reported health effects of water contamination, e.g. diarrhea, skin rashes, etc.
6. Judgment of reversibility. (How) can natural water bodies be restored or improved?

### D.3. Fish and other aquatic fauna

1. Describe original aquatic life in the area. Include fish species as well as other aquatic animals such as water turtles, otters, alligators/crocodiles, and other reptiles.
2. Describe presence of home breeding of aquatic fauna, e.g. fish and shrimp farms.
3. What fish and other aquatic animal species do local people and migrants catch in the mining area and its vicinities?
4. Are these animals taken for home consumption, the local market, the regional market, or a larger market?
5. Do people catch (live) animals for wildlife trade, for example trade in ivory, singing birds, reptiles for collectors, and colorful feathers. Are these products sold at the local, domestic, or international market?
6. Has mining increased demand for fish and species, for example due to the arrival of migrant miners?
7. Are there any fish and other aquatic species that were frequently caught in the past but are now difficult to find or even locally extinct?
8. Effect of mining on aquatic fauna according to local people
9. Effect of mining on fish population and other aquatic animals according to researcher. E.g. Body mass, diversity, chemical pollution, etc.
10. Judgment of reversibility. (How) can aquatic populations be restored or improved?

*Additional observations of the impact of mining on aquatic resources, including rivers, streams, and aquatic fauna:*

### E. SANITATION AND WASTE DISPOSAL

<p>1. Describe sanitary provisions in the community, including the presence of common or private pit latrines, an open or closed sewage system, etc.</p>
<p>2. What kind of sanitary provisions can be found at the mining site? For example, do miners have access to pit latrines or other toilet facilities? Are the places used for toilet close to vulnerable sites such as streams?</p>
<p>3. How do community members dispose of solid and liquid wastes, both domestic and general? (e.g. burning, burying, garbage service)</p>
<p>4. How do miners dispose of solid and liquid wastes?</p>
<p>5. If chemicals or oil are used in mining, how are they disposed of?</p>
<p>6. Does the sanitation or waste disposal system in the community or the mining site present risks to human health? Describe the level of hygiene, including the presence of pests (rats, insects).</p>
<p>7. Do miners and (other) community members complain about sanitation and waste disposal facilities, for example about bad smell or pests?</p>

# CHILDREN'S FOCUS GROUP TEMPLATE

(H)

## FOR BASELINE DATA ON CHILDREN'S PARTICIPATION IN MINING

*General instructions:* Conduct one or two focus groups per mine site with children participating in mining and mining-related services (e.g. food selling, water vending, carrying ore, etc). We consider a child any individual of age 16 and younger, and a school-aged child as anyone of age 12 and younger. Ideally, each focus group should have 6-8 participants. If boys and girls perform different activities, it is advisable to interview them in separate focus groups. The same applies for school-aged children and children above 12 years of age. For reasons of professional ethics, you will need to obtain parental consent prior to interviewing minors. If the parents are not available, consent must be elicited from a guardian or the community elders.

Project name: _____		
Project sponsor: _____		
Implementing institution: _____		
Local project director: _____		
Research coordinator: _____		
Country: _____	State: _____	District: _____
Village name: _____	Interviewee: _____	
Village ID: _____	Date & Time: _____	

Observations:

**0. Introductions**

Introduce researcher(s). Explain purpose of the study; why are we here. What will local miners get out of participation, if anything? Explain the child his or her rights (participation is voluntary) Explain that the information will be treated confidentially; the interviewee’s identity will not be revealed. Obtain informed consent.

**A. General**

1. Estimate of number of children in local mining work force:
2. Estimate of % of children in local mining work force:
3. Community members see child labor in the mines as (circle all that apply):
  - a. A necessary strategy to secure sufficient family income
  - b. An opportunity to earn a little extra
  - c. A form of vocational training for children
  - d. Interfering with children’s education/development
  - e. Other, namely:

**B. List of Participants**

	Name	Age (Yr)	work
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

**C. Social organization and Family environment**

1. Do most children work with their parents or other family members? How many children in this group have come to work with their parents?
2. What share of children is working with siblings? And with other family members?
3. How many children are working without any relatives? Where are their families?
4. Are there many children in this mine who no longer have parents? How many children in this group are orphans?

5. How is child labor organized? Do children work in groups or individually?
6. Do children work for adults, for other children, or for themselves?
7. Have some children assumed leadership? What is this leadership based upon?
8. If someone has a problem, for example an injury that disallows work for some period of time, have children developed ways of helping one another?

**D. Labor conditions**

1. What are typical jobs that young ( $\leq 12$ ) girls do?
2. What are typical jobs that older ( $> 12$ ) girls do?
3. What are typical jobs that young ( $\leq 12$ ) boys do?
4. What are typical jobs that older ( $> 12$ ) boys do?
5. What percentage of children works
  - a. Part time ( $< 4$  hrs/day):
  - b. Full-time ( $\geq 4$  hrs/day):
6. What share of children works
  - a. Only one day/week or less:
  - b. Only on weekends:
  - c. Only during the week:
  - d. More than 5 days/week:

7.

What can you earn per day? List the five most common jobs children perform	Low; N/day	High: N/day

8. Do you give a share of what you earn to your parents?

9. Do you give a share of what you earn to other people?

10. What other things do you do with your money?

11. What share of children uses capacity enhancing drugs (e.g. amphetamines) or pain relievers at least once a week?

**E. Future Perspectives**

1. How many more years would you like to continue working here? Do you want to be a miner for life?

2. What other jobs would you like to do? What would you need to do to reach these jobs? Is there anything preventing you from achieving this goal?

3. What is most severely lacking here for you and other children? How could the lives of working children be made better?

4. When you yourself will have children, do you want them to be miners?

## **ANNEX III: MODEL OUTLINE FOR A BASELINE REPORT**

*Below follows a suggested lay-out for a baseline study report. Your own report should reflect the demands stated in your TOR, and may or may not follow this template or other toolkit elements.*

*The report should be written as a logically progressing story and be relatively concise. Remember that most baseline studies are written for policy makers, who do not like to read long reports. Present only the most important (for the community and policy) items in the text. All other interesting detail that is not crucial to policy should go in annexes. These could include, for example, the complete gender, environmental, and technical reports, while only parts of these reports may appear in the main text body.*

*Suggested page lengths are excluding figures and tables. A list of suggested figures and numbers is included as part of the toolkit.*

### **SUMMARY (3 pages)**

- Study objective
- Short summary of background and methods. Mention the Sustainable Livelihoods approach and why it was used.
- Summary of data, focusing on 25 selected key indicators. Discuss in logical progression the five types of capital at community level/household level/miners
- Conclusions
- Main recommendations

### **TABLE OF CONTENTS**

Contents

List of tables

List of figures and plates

### **I. INTRODUCTION (3 pages)**

- Study aims and objectives. Why is this report written; why is it relevant?
- Study focus: type of mining, location, and country
- Approach. How is this study analyzing the problems and opportunities in small-scale mining communities? How is it different from previous studies?
- Client - who is the requesting party?
- Political context. Is this baseline study part of a larger project? What is its objective?
- Discuss lay-out of report; how will you present the information

## II. METHODS

### II.1 Sustainable livelihoods approach (2-3 pages).

What are sustainable livelihoods? Why do we use SLA in poverty reduction strategies, why is this approach useful in working with ASM communities?

### II.2 Methods used for primary data collection (2-3 pages)

Composition of the research team, period of fieldwork, brief description of logistics (roles of chiefs and regional leaders); community relations, use of the six templates, general techniques (household survey, personal interviews, observations, measurements, focus groups). Any relevant problems encountered in the field.

### II.3 Methods for secondary data collection (1/2 page)

Where did you get the information from?

### II.4 Data analysis and report writing (1 page)

Who did it, methods used for data entry, coding, and analysis, time frame.

### II.5. Community consultation (1 page)

Why did you do this, what was the result. How have you changed your report on the basis of community feedback?

## III. SITE DESCRIPTION

### III.1. Country (2-3 pages)

- Key figures about the country: population size and make-up (main ethnic and religious groups), significant cultural and religious differences in population
- Natural environment and resources, climate, economy, political system.
- Human capital indicators, specifically health (nutrition, STDs, mortality) and education. Resume results from existing poverty studies. Gender issues (e.g. role of women in government at national level)
- Relevant microeconomic statistics; household income, cost of living, capacity of saving, using culturally relevant indicators. Macroeconomic framework.
- Political context: governance, security, justice, human and democratic rights. Institutional landscape, private-public sector relations. Social security system
- Geology and structure at national level!

*See toolkit general issues and national level benchmark indicators*

### III.2 Study area: State (2 pages)

- General: population size and make-up, culture, natural environment and resources, climate, economy, political system
- Infrastructure; including spread and quality of road network, telephone net, electricity, and running water
- Key stakeholders of private sector (Mining companies, NGOs)

- Regional government and mining authorities at regional level; geological survey, environmental authorities.
- ASM in the region

### **III.3 Research site: Mining communities (2-3 pages)**

- Defining communities; i.e. names, approximate size and location. When established.
- Population numbers (men, women, children), number of households and compounds. Number of households with at least one miner
- Migrant community or not
- Socioeconomic characterization and livelihood strategies. Some of the general community template A data can be here, including observations.
- Brief characterization of geology and natural features
- ASM in study site. Some of the community mining template B data can be here, including observations.

## **IV. BACKGROUND**

### **IV.1. Mining on national level (5-6 pages)**

- History of large and small-scale mining in Nigeria (1 page)
- Nigerian Mining industry (1 page); what is being mined at moment, most important mineral resources and their relevance for economy (e.g. % of exports and GDP), especially gold.
- Key stakeholders of private sector (Mining companies, Chamber of mines, NGOs) (1/2 page)
- Definition of ASM as used in the country and in this study.(1/2 to 1 page).  
Public opinion of ASM
- ASM at the moment (2-3- pages); estimates of numbers of people involved, who are they.(migrants and locals); minerals mined and methods used; legal status; main problems for miners and for country; any threats to natural environment and public health.
- Relevance of ASM for foreign export balance and GDP (2 sentences)

### **IV.2. Role of Government vis-à-vis ASM (3 pages)**

- Mining policy (1 page) – focus on ASM. Mining authorities, geological services, environmental authorities
- Fiscal authorities and market regulations (1/2 page)
- Legal framework (1 page) – focus on ASM, old and new (draft) mining law. Additional information can go in Annex
- Government involvement in practice (1/2 page): presence of national government and district commissioners in the field.

## **DATA PRESENTATION**

*Primary data obtained during fieldwork. The specific issues checklist, community level benchmark indicators and ASM operation level indicators in the toolkit provide the portfolio of issues to be captured in the below chapters.*

*The original draft report should be changed in two main ways:*

- 1. Place all natural capital data together, and same for other capitals. That is, do not organize the report according to the templates but according to capital.*
- 2. Data should be presented as a story that is easy to follow. Most tables can go in Annexes.*

## **V. NATURAL CAPITAL ( $\pm$ 7 pages)**

### **V.1 General (1 page)**

- Endowment of area with natural resources; presence of forest, arable land, water, etc.

### **V.2 Community use and access to natural resources (2 pages)**

- What resources are used by community members and how; e.g. agriculture, collecting firewood.
- Requirements for access to natural resources.
- Conflicts about resource use.
- Land rights, indigenous rights, titling issues. Informal property rights

### **V.3 Geology (2 pages)**

- Geological characterization
- Mineral resources and types of deposits exploited by ASM.
- Past, actual, and future mineral production by ASM.

### **V.4 Natural resources and ASM (2 pages)**

- Availability of natural resources required by ASM other than mineral deposits
- Natural resources potentially affected by ASM; environmentally sensitive areas used or targeted by ASM.
- Mining rights, titling issues.

## **VI. HUMAN CAPITAL ( $\pm$ 10 pages)**

### **VI.1. Population make-up (2 page)**

- Composition of population in terms of ethnicity, religion, and origin. Main differences between the groups, if any.

### **VI.2 Education and skills (3 pages)**

- Presence and quality of schools (if there are special education schools such as those for Muslim education, mention those);

- Access to education (distance, social and financial barriers etc);
- School attendance and drop out rates;
- Educational achievement (M/F),
- Literacy (M/F) in English and Arabic.
- Access to higher education and vocational training; share of people in the community who have attended such training.

*Compare educational indicators for different groups in the community: men and women; miners and non-miners; migrants and locals.*

### **VI.3. Health** (3 pages)

- Presence and quality of local health care provisions (clinics, nurses),
- Access to health care (e.g. distance to nearest clinic, financial barriers),
- Presence of local health providers and traditional healers.
- Local indicators incl. HIV/AIDS, child mortality, nutrition.

### **VI.4. Gender relations** (2 pages)

- Description of gender roles; what tasks are men and women expected to perform.
- Women's power of decision making at community and household levels.
- Socialization; Are girls being treated differently than boys from a young age in terms of access to education and other resources and the work they do?
- Participation in mining; gender barriers to becoming a miner and reasons why some women do mine.
- Results of the needs assessment also could be in this section.

## **VII. FINANCIAL** ( $\pm$ 10 pages)

### **VII.1 Community level economic structures and employment** (3 pages)

- Economic relevance of mining at community level.
- Local employment/economic opportunities in general and related to ASM.
- Cross sectoral linkages (e.g. does mining support agriculture and vice versa?)

### **VII.2 Income and expenditures** (3 pages)

- Household incomes and income generation from ASM (as compared to other livelihood options).
- Expenditures; how do they compare to incomes? What do people spend most money on? What percentage of incomes is spent on food?

### **VII.3. Credit and savings** (1 page)

- Access to credit (for ASM and other) and dependence on private creditors and money lenders.
- Savings in money and alternative methods of saving. Presence or absence of culture of reinvestment in mines.

### **VII.4. Marketing chain** (2 pages)

- Who buys gold from whom?

- At what prices. Are these prices fair/ do they compare to national level prices?
- Where do miners obtain marketing information?

#### **VII.5.Criminal activities** (1 page)

- Linkages with criminal activity: drugs and weapon trafficking

### **VIII. SOCIAL CAPITAL** ( $\pm$ 9 pages)

#### **VIII.1. Community governance** (2 pages)

- Hierarchical structures in community.
- Relations of traditional rulers and state representatives.

#### **VIII.2. Safety nets** (2 pages)

- Description of formal safety nets; Access to social security.
- Description of informal safety nets; Self-help groups; for who (M/F), what do they do.
- Presence of cooperatives and self-help groups for miners. Effectiveness of miners' associations in representing ASM.

#### **VIII.3 Organization of ASM** (3 pages)

- Organizational structures of ASM and legitimacy of representation structures. Arrangements for mine unit ownership
- Community and family context of ASM, incl. gender roles (as far as not yet discussed).
- Existing conflicts among miners, and between miners and others

#### **VIII.4 Migration issues** (2 pages)

- Characteristics of migrant population (from where, numbers, demographics)
- Character of migration (period, length of time, push and pull causes)
- Relations local residents-migrants
- Meaning of migration for local economy

### **IX. PHYSICAL CAPITAL** ( $\pm$ 8 pages)

#### **IX.1 Community infrastructure** (3 pages)

- Quality and spread of infrastructure in the villages, including access to road network, telephone net, other communication facilities (radio, TV), electricity, waste management, and running water. Who is responsible for maintenance?
- Contribution of ASM to creation and maintenance of infrastructure.
- Continuity or discontinuity of services, vulnerability to seasonal changes.

#### **IX.2 Housing** (1 page)

- Typical housing of ASM households, and as compared to non-ASM households. What do houses say about permanence of community?

## **IX.2 Mining technology and development** (4 pages)

- Technology used in ASM, degree of mechanization, and use of chemicals
- Assessment of suitability in terms of productivity and recovery; reasons for use of ‘inappropriate’ mining technology.
- Particular risks associated with technology
- Opportunities associated with mining technology
- Average and range of investments per production unit, as well as estimated investment needed to improve production and mineral recovery.

## **X. CONCLUSIONS/SYNTHESIS** (3 pages)

- What are your main findings in the five capital areas?
- How could you classify poverty in the research communities? What can you say about poverty levels?
- What is the role of ASM in either alleviating or aggravating poverty? Under what conditions could ASM contribute to poverty reduction? What changes are most needed to make this possible, or to facilitate this transition?
- Results for 25 key indicators

## **XI. RECOMMENDATIONS** (5 pages)

What are the principal problems identified?

What are the possible solutions?

What can

- the government,
- the private sector, and
- community members

do to alleviate poverty in the target ASM communities?

Be specific and consider the country’s reality. What are the most pressing needs that need to be addressed, what are secondary needs? What actions can be taken immediately; what activities could be part of long term planning for improved sustainability in the ASM sector?

## **CITED SOURCES**

List all sources you used to obtain secondary information, including internet locations. Use an internationally accepted referencing style, e.g. from a high-standing mining journal.

## **APPENDICES/ANNEX**

## **ANNEX IV: COMMON TERMS OF REFERENCE FOR MMSD REGIONAL STUDY**

*Common Terms of Reference for Regional/Country Studies on Artisanal and Small-Scale Mining for the MMSD Project  
Prepared by J. Davidson*

*This outline is based on Latin American and Southern African plans for work on SSM, the SSM global report objectives and recent discussions between researchers in London following the CASM meeting*

### **The Research Challenge**

In this exercise, it will be important to try to capture as best as possible an understanding of the variety of realities and faces of artisanal and small-scale mining, as practiced in the various countries and regions being studied. We also want to provide examples of how artisanal/small-scale mining can adapt and progress with the times.

Research foci were identified during regional and international discussions, which occurred between December 2000 and March 2001. They will hopefully provide a common basis for the reporting of information and evaluation of trends between regions in the MMSD global report. The common terms of research do not prevent a regional initiative from collecting additional information or analyzing additional topics or themes. The list of tasks on first glance may appear to be extensive, but some of the indicated work should be fairly straightforward, especially those tasks which involve the identification and referencing of documents (I and V), or the identification and documentation of specific events, projects or persons (IV, VI, VII and VIII). Task II, an attempt to define the characteristics of the sub-sector quantitatively, will involve a review of published and possibly unpublished statistics, the extrapolation of data where little may exist, and the identification and interpretation of trends. This will probably be the most difficult of the list to complete. Task III, a description of the technical and environmental characteristics, is optional, but information on these themes should be picked up in the bibliographic compilation (Task V).

In any case, this will be a limited “research” exercise, based principally on the identification and review of secondary sources. Direct familiarity on the part of the researchers, with the characteristics of small-scale mining as it occurs in the countries being studied, should facilitate the work. If information is non-existent or very difficult to obtain, this should be explicitly noted. The research effort will assist in identifying critical information gaps. Researchers should keep in mind that their work will probably not be nor will it need to be definitive. It should be as complete as time and circumstances permit. Nevertheless, the results obtained may only be of an indicative or suggestive nature, requiring additional work beyond the scope of this effort, to lend real clarity to the issues. This is in fact what is expected - that the work will establish the points of departure for more in-depth studies and evaluations, or new initiatives, beyond the life of MMSD.

## Research Tasks

### I. Characterize the **current legal status** of artisanal and small-scale mining in the region

Legal definitions may or may not take the differences in types of small scale mining into account [see end note]. Most legal definitions, when they exist, distinguish between types of small-scale mining based on the technology applied to the exploitation (manual tools, machines), the depth of exploitation, or their projected daily or annual output. In a few cases, a special type has been defined (e.g. Venezuela), the “mancomunidad”, a collective or group of people united in a common activity, in this case small-scale mining. In some countries, the government may distinguish between small-scale mining of metals (including precious minerals), industrial minerals, and energy minerals (like coal and uranium), with different rules and regulations applying in each case.

- a) Document **official definitions** of artisanal and/or small-scale mining, if any, used by government for administrative or policy purposes as described in mining codes, special decrees or mineral policy statements (include references)
- b) inventory all **legal codes and regulations** (mining, environment, tax, marketing), or specific chapters or clauses therein, which pertain to artisanal and/or small scale mining practice and its regulation
- c) identify and reference any **official policy statements** or sections of policy statements that relate to artisanal and small-scale mining
- d) describe any **changes** to the legal or policy framework that have occurred during the past 10 years (e.g. promulgation of a new code specific to smallscale mining or new regulations)

Have the changes identified had any discernible impact on rationalizing or regulating existing and promoting new activity within the sub-sector ? Identify any promising new policy directions.

### II. Characterize the actual status, role and importance of artisanal and small-scale mining in the region

- a) collect any **official statistics** on registered or **formal miners**, artisanal and small-scale, on mill, processing or fabricating operations that serve the needs of the small miners, on licensed buying and marketing agents; try to break these out on the basis of mineral or mineral group (industrial minerals, energy minerals, precious minerals (gold, silver, platinum, diamonds, colored stones), and metals)
- b) collect/compile any official and/or unofficial statistics **on mineral production or revenues** derived from artisanal and small-scale mining activities, by mineral, and according to whether production is registered or unregistered Terms of Reference for Regional/Country Studies on SSM, 5 April 2001 3
- c) compile any official or unofficial estimates of **participation in non-formal** or non-registered mining, processing and marketing activities, and break them out to whatever extent possible

- d) try to estimate the **numbers being supported** by the income generated from artisanal and small-scale mining activities
- e) try to estimate the relative importance (e.g. percentage breakdown) of the **different social-economic formations** [see end note] across the sub-sector, or for the most important mineral(s) or mineral group(s) being exploited, if possible
- f) identify and describe the various ways in which **production and processing activities** are organized and carried out (i.e. as individuals, as family groups, as informal partnerships, as formal civil associations or cooperatives, as informal or formal small companies (miners and mill operators as employees, or as partners), and try to determine their relative importance across the subsector, or for the most important mineral(s) or mineral group(s) being exploited
- g) try to estimate **the net income** to the miners, generated by the different types of activities, within one or two selected minerals or mineral groups, if possible
- h) try to estimate the number and identify the **roles of women and children** involved in the various types of activities identified within the countries being studied
- i) try to estimate the indirect economic benefits or **multiplier effects** of the identified activities
- j) identify and try to quantify the **negative impacts on environment**, surrounding communities, and on **health**, that can be linked to small-scale mining activities in the country or region

Describe to the extent that you can, any trends or significant changes that have occurred over the past 10 years, with respect to the numbers of people involved, the relative importance of the socio-economic formations, the commodity focus, the involvements of women and children, the formalization of activity, the extent of local processing and its multiplier effects, the regional or country perspective on negative impacts (whether environmental, community or health related), etc.

III. Identify and describe the **range of practices in mining, processing and environmental control** currently in use across the sub-sector, and any significant changes that may have occurred during the past 10 years (optional)

IV. Inventory the following **support activities** for small-scale mining that have functioned or been initiated during the past 10 years

- a) **financing or credit schemes**
- b) **producer associations** (umbrella organizations, federations, mining chambers, regional or national associations) Terms of Reference for Regional/Country Studies on SSM, 5 April 2001 4
- c) formal **technical assistance projects**, training programs
  - government initiated or coordinated
  - ngo initiated or coordinated
  - private sector initiated or coordinated (private consulting group or mining company)
  - international development agency coordinated (e.g. UNDP, World Bank)

Describe any innovations in practice, program focus or implementing strategies or new initiatives that have occurred during the past 10 years. Try to assess the impact of these support activities on improving the practice, organization, and productive potential of the intended beneficiaries. Identify any promising new approaches.

V. Develop a preliminary **bibliography of published work** related to small-scale mining during the past 10 years, with special reference to the following theme areas

- a) legal codes and regulations, and legal reviews
- b) policy statements
- c) mining and processing practices
- d) environmental impacts, their management and control
- e) financing and marketing schemes
- f) technical assistance projects and programs
- g) organizational issues, including forms of work organization
- h) gender and child labor issues
- i) technology research
- j) environmental and community health
- k) occupational health and safety

VI. List and describe the interactions which have occurred during the past 10 years between **small-scale miners and medium and large exploration and mining companies** (state-owned, private foreign owned, or private domestic owned), both negative and positive.

Refer to such events as land expropriation and population displacement, invasion of concessions, collaborative activities, informal assistance, company policies viz. artisanal mining, etc.

VII. Record some examples (vignettes or short stories), which describe **positive change** or successful interventions in any of the various theme areas (e.g. the elimination of child labor from a small-mining operation, the successful adoption of the use of mercury retorts, the learning and application of environmental management practices, a woman owned and operated mining venture, the use of steel toed boots, a day care center at the mine, etc)

VIII. Compile a **list of resource people** and contacts with experience or current involvement in the support, evaluation, administration or control of small-scale mining activities in the countries being studied.

IX. Produce a **written summary**, which highlights the most important features of artisanal and small-scale mining in the country being studied, any significant progress made in legal reform, environmental management, and other sustainability issues, any success stories, and important weaknesses or deficiencies which remain to be addressed

in order to strengthen or consolidate the sub-sector's ability to be a constructive factor in the development of sustainable rural livelihoods.

### **Note to Researchers:**

An Excel template will be created within the next few weeks that will allow for the entry and compilation of data related to Tasks I, IV,V, VI and VIII.

### **End Note**

### **Characterization of artisanal and small-scale mining activity in the regions**

MMSD has chosen to try to understand the different social-economic formations of small-scale mining in terms of their livelihood functions and potential. Four types are defined:

- a) mining activity which is **full-time, year round** and is the **principal livelihood** of the household or individual
- b) mining activity which is **full-time, but seasonal**, complementing other subsistence or commercial activities, like farming, fishing, or animal husbandry, and is fully integrated into the household economic cycle
- c) mining activity which is **part-time, may be year round or occasional**, and provides a **supplement to household income** or meets a special need
- d) mining activity which tends to be **full-time, but short-term**, undertaken
  - i) in **response to economic or environmental stress** in the home area or,
  - ii) **to take advantage of a potential bonanza opportunity** (e.g. a gold rush).

Type (d) would typically end when other livelihood opportunities become available in the home area or the bonanza opportunity is played out.

These activities may be legally registered (or formal), or they may be “unauthorized”, informal. Those types which are formalized, potentially, but do not always, include Types (a), (b), and (d, ii).

Women and children may be involved in all of them, but the nature and extent of their involvement may vary dramatically, between types, and between cultures and regions.

All or some of these types may exist within a country or region. The small-scale production of a specific mineral commodity may be characterized by all of the types enumerated above, while the production of others may involve only one or some.