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Estelle Levin Ltd.

REPORT

**MAY
2013**



ARTISANAL AND SMALL-SCALE MINING IN PROTECTED AREAS AND CRITICAL ECOSYSTEMS PROGRAMME (ASM-PACE)

CAN ARTISANAL MINING & CONSERVATION CO-EXIST?

A case study of artisanal gold & diamond mining in and adjacent to Sierra Leone's Gola Rainforest National Park and recommendations on the way forward

MAY 2013

By Cristina Villegas, Ansumana Babar Turay, and Daniel Sarmu

The aim of **ASM-PACE** is to address the environmental impacts of artisanal and small scale mining (ASM) in some of the world's most important ecosystems. The project uses a scientific foundation of knowledge, participatory methods and rights-based approaches to work with miners and their communities – rather than in opposition – to design sustainable, win-win solutions that will last. The project is focused exclusively on ASM occurring in and around protected areas and critical ecosystems (“PACE”) that are judged to be key sites for conservation. For more information please visit www.asm-pace.org.

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Gola Rainforest National Park (GRNP). The unique value of the Gola forests for biodiversity was highlighted over 20 years ago by a series of rapid biodiversity assessments led by the Conservation Society of Sierra Leone and the RSPB. A partnership developed between the Forestry Division of the Government of Sierra Leone, the Conservation Society of Sierra Leone (National BirdLife Partner) and the RSPB to conserve the 71,000 hectares of Gola Forest Reserves (sitting within a larger area referred to as Gola Forest) and agreements were made with the local communities in 2001 and 2002 to manage the forests for conservation. The Gola Forest Reserves then became the Gola Rainforest National Park (GRNP), officially launched in December 2011

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The authors would like to thank the following people and institutions who generously donated their time and knowledge in the course of this study. In particular, we would like to thank Nicolas Tubbs (RSPB) for taking leadership on a difficult issue, Fomba Kanneh (GRNP) for exceptional community engagement and assisting us as a local guide, Dr Frazer Sinclair for his assistance in coordinating local knowledge required for mapping, and the entire staff of the Gola Rainforest National Park programme and the GRNP partners that so helpfully facilitated our site visits. Thank you to Estelle Levin (ELL), Jon Hobbs (WWF), Jonathan Barnard (RSPB), Emma Tatum-Hume (RSPB) and Richard Lloyd (RSPB), who each reviewed an early version of this report. Thanks also to Rachel Lichte of the Clarity Project and Professor Danny Hoffman of the University of Washington provided useful framing and contextual advice, and Kate Malpeli of the US Geological Service (USGS) who assisted authors with geological queries. Most of all, we are in deepest thanks to the area communities who so graciously welcomed the research team and who wanted to help us learn about mining in this part of the Gola forest.

During the course of this research project, Sierra Leone's Director of Mines Jonathan Sharkah, passed away suddenly. We extend our most profound condolences to his family.

This specific report was completed with the generous support of The Tiffany & Co. Foundation. The ASM-PACE Programme is generously funded by The Tiffany & Co. Foundation, the World Bank's Programme on Forests (PROFOR), the World Bank's Sustainable Energy Gas, Oil and Mining (SEGOM) Unit, WWF-Netherlands, WWF-USA, WWF-DRC, CARPE, WWF-Madagascar, Projet de Gouvernance des Ressources Minérales (PGRM/ Madagascar), the World Bank's Mining and Gas Unit, Estelle Levin Ltd. (ELL), The Arcus Foundation, and the Africa Biodiversity Collaborative Group (ABCG) through funding by the United States Agency for International Development (USAID), with the technical support of WWF-International.

Front cover image: Mining site on the outskirts of the Gola Rainforest National Park in Sierra Leone, © Estelle Levin Ltd
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Acronyms

Abbreviation	Definition
ARTP	Across the River Transboundary Peace Park Project
ASM	Artisanal and Small-scale Mining
ASM-PACE	Artisanal and Small-Scale Mining (ASM) in Protected Areas and Critical Ecosystems (PACE)
BSA	Benefit Sharing Agreement
CDF	Community Development Fund
CSSL	Conservation Society of Sierra Leone
DACDF	Diamond-Area Community Development Fund
EPA	Environmental Protection Agency
ESER-ASM	Ecologically and Socio-Economically Responsive Artisanal and Small-scale Mining
FECs	Forest Edge Communities
GGDO	Government Gold and Diamond Office
GoSL	Government of Sierra Leone
GRNP	Gola Rainforest National Park
MAFFS	Ministry of Agriculture, Forestry, and Food Security
MMR	Ministry of Mineral Resources
MOU	Memorandum of Understanding
NGO	Non-Governmental Organization
NTFP	Non-Timber Forest Products
OKNP	Outamba Kilimi National Park
PA	Protected Area
PACE	Protected Areas and Critical Ecosystems
REDD	Reducing Emissions from Deforestation and forest Degradation
RSPB	Royal Society for the Protection of Birds
UN	United Nations
USAID	United States Agency for International Development
USD or US\$	US Dollar
WWF	World Wide Fund for Nature, also known as the World Wildlife Fund

Glossary

Term	Definition
Acre	Refers to the surface area measurements of an artisanal diamond license, which is 1 acre—approximately 210 feet by 210 feet—and a perfect square.
Artisanal and small-scale Mining (ASM)	Mining conducted with rudimentary tools such as picks and shovels or simple machinery, usually informal or semi-formal individuals or small groups of people on a subsistence basis.
Concessions	Mineral exploration areas within which companies are granted rights to operate and derive revenues from that operation.
Critical Ecosystem	The site is not a protected area but it is a WWF Priority Place. OR The site affected is not a protected area or a WWF Priority Place, but <i>it is</i> in one of the Global200 Priority Ecoregions ¹
Digger	A type of ASM labourer whose role it is to recover the mineral, clear vegetation and boulders, removing overburden and extracting and transporting gravel. Often confused with the term ‘miner’ and may be pejorative in some country contexts.
FairMined	The Alliance for Responsible Mining (ARM) label. FairMined is “a certification system developed to promote sustainable development of Artisanal and Small-scale Mining communities. The standard includes four types of requirements to perform responsible mining: social development, economic development, environmental protection and labour conditions. Miners certified under the FAIRMINED standard receive a fair price as well as an additional premium that is democratically invested in the community.” ²
Fair Trade	Fair Trade minerals are those that, in conjunction with the Fair Trade Foundation, are certified that artisanal and small-scale miners receive a Fairtrade Minimum Price; receive a Fairtrade premium payment, which is democratically reinvested in community projects and improving miners’ operations. This is calculated as 10% of the applicable LBMA fixing); for Ecological Gold (gold extracted without the use of chemicals) the Fairtrade premium is calculated as 15% of the applicable LBMA fixing; develop long term business relations with their commercial partners; have developed democratic and accountable organisations and formalized all their operations; are using safe working practices including the management of toxic chemicals, such as mercury and cyanide, used in the gold recovery process; are respectful of the environment; recognize the rights of women miners; and do not allow child labour in their operations. ³
Gazetting	Classifying a place as protected.
Gold-washing	Concentrating the gold using water and gravimetric methods, e.g. with a pan or sluice.
Industrial Mining	Often termed medium- or large-scale, done by professional, corporate outfits legally and in the pursuit of profit. High level of mechanisation and capitalisation; low labour intensity.
Miner	Miner usually refers to any person involved in artisanal and small-scale mining, ⁴ however, in the Sierra Leonean context, ‘digger’ and ‘tributor’ refers to the person doing the physical labour and the ‘miner’ is the legal license holder (and rarely does the digging).
Protected Area	A location that receives protection because of its recognized natural, ecological and/or cultural values. There are different kinds of protected areas, which vary by the level of protection depending on the enabling laws of each country or the regulations of the international organisations involved. The term ‘protected area’ also includes Marine Protected Areas. ⁵
Regulation	A set of laws and rules imposed by a government, backed by the use of penalties that are intended specifically to modify the economic behaviour of individuals and firms in the private sector. ⁶
Standard	A set of officially approved principles and criteria designed to measure and safeguard specified social, environmental, and management issues in the industrial gold mining sector.
Tailings	Leftover material/waste from the mining process.
Tributor	In the Sierra Leonean context, a tributor is another word for a digger, which is the person who does the physical labour required in artisanal mining.

¹ Olson & Dinerstein, 2002.

² See www.communitymining.org for more information on the standard and ARM's active projects worldwide. Definition from ARM, 2013.

³ See <http://www.fairgold.org/> for more information

⁴ ARM-FLO definition

⁵ See <http://www.protectedplanet.net/search/> for more information

⁶ Based on OECD

Executive Summary

Conservation and artisanal mining are often seen as irreconcilable. Indeed, if left unmonitored, artisanal mining—an important rural livelihood for an estimated 20-30 million people around the world—can cause significant direct and indirect environmental damage due to its mining methods (e.g. clear-cutting forests, river dredging, frequent use of toxic chemicals) or associated livelihood practices (e.g. gathering firewood, hunting for food or trade) that support mining populations.⁷ In areas of high-conservation value, these impacts can be exacerbated. However, due to its usually important and underestimated role in local livelihoods, trying to stop artisanal mining altogether is often a futile effort.⁸ In these situations where mining and forests meet, a pragmatic approach is required to cope with the challenges mining presents without interrupting negatively its important local economic role. In this report, a variety of recommendations are detailed that aim to promote positive engagement and ultimately successful coexistence of mining and conservation.

This report is a case study of the artisanal mining taking place in the vicinity of Sierra Leone's Gola Rainforest National Park (GRNP), which is part of a trans-boundary forest along the Sierra Leone and Liberia national borders. While an estimated 90 per cent of the Forest Edge Communities (FECs) that live around the GRNP are primarily subsistence agriculturalists, a minority have historically taken part in mining as a seasonal activity for the complementary source of income. Indeed, since artisanal mining first began in Sierra Leone in the 1950s,⁹ mining has been an important part of life in wider Gola Forest region¹⁰ in which the GRNP is situated. Before the civil war of the 1990s, some communities—including men and women community members—were reportedly actively mining diamonds and gold (respectively) within what is now the national park,¹¹ which was then a Forest Reserve. Ten years ago, in agreement with the seven chiefdoms surrounding the Gola Forest Reserves, a programme of conservation management began in the Gola Forest. Forest guards were recruited to enforce the management agreements. Until 2011, community engagement and enforcement by forest guards appeared to be enough of a deterrence to keep most artisanal mining out of the GRNP.¹²

In November 2011, however, GRNP experienced a sudden increase in mining in the Nomo chiefdom. During this time, miners were illegally mining gold and diamonds at night within restricted sections of the Park boundaries. There are several hundred diggers estimated to be involved, ranging in ages 12 to 80 years old, both men and women, and of Sierra Leonean, Liberian, and Malian origin.¹³ The overburden at the rush sites of the Park appears to be approximately one metre deep;¹⁴ this is remarkably shallow compared with the typical three metres (or more) at other sites in the region and five metres in Kono, the historically important diamond district. The shallowness of the overburden should be considered a major “pull factor” that will continue to attract local attention to the Park because shallow deposits mean higher profit potential and less risk for miners due to less upfront investment (it also potentially means easier rehabilitation). Mining of any type is strictly prohibited in the Park and illicit miners face arrests by Sierra Leonean police, trial by Kenema District court authorities, prison time, and fines. Videos of the arrests and a selected review of court records reveal that significant numbers of local community members are involved as diggers. Individual diggers are estimated to make US\$2 per day for their physical labour mining in the Park.¹⁵ Finally, there have been notable security incidents with those involved in the rush-mining; this is described in this report's section 3.

In addition to the rush mining, there is active community-based mining occurring outside the National Park along its boundary in Malema chiefdom. Community members and seasonal economic migrants mine primarily

⁷ See Villegas et al., 2012.

⁸ In its landmark report “Breaking New Ground” for the Mining, Minerals, and Sustainable Development Project, IIED observed: “The lack of government success in controlling ASM activities has in part been due to a tendency for regulatory frameworks to be control-oriented, with few obvious benefits or incentives for miners... Artisanal and small-scale miners ... will only stop mining if alternative, more attractive sources of income are available.” (IIED MMSD, 2002, Chapter 13, p. 323). Indeed, based on report authors' interviews with chiefs and government authorities, they all suggested any attempt to stop ASM in the region would be completely futile given the lack of available alternatives and also unwise from a conflict perspective.

⁹ Diamonds were first discovered in Sierra Leone in December 1929 but mining was industrial in nature until the mid-1950s.

¹⁰ According to community meetings and interviews held in Malema chiefdom in January 2013.

¹¹ According to community members in a multi-village workshop in January 2013, and according to the Mami Queen (leader of women) of the Malema chiefdom in an interview with Villegas, Turay, and Sarmu in January 2013. ASM activity within the Gola Forest protected area boundaries is also documented in Richards (1996).

¹² See section 2.3 for details of the suspension of industrial mining in this area

¹³ Personal communication between Villegas, Turay, and Park Operations Superintendent Tamba Vandi on 25 January 2013, and on based on communications between Villegas, Turay, GRNP staff, and local police in the course of research.

¹⁴ As observed in a video provided by the GRNP. Viewed by Villegas and Turay on 25 January 2013.

¹⁵ Based on statements by those arrested; statements were captured on video. Video was provided by the GRNP and was viewed by Villegas and Turay on 25 January 2013.

from February through June. The mining communities reported receptiveness to ‘strangers’ (outsiders) because artisanal diamond mining requires intense physical labour and more is achieved working together than separately. Most diamond diggers are Sierra Leonean males between ages between 18-35 years. While researchers observed no women mine workers on the sites visited, it was widely agreed that women play an important part of the area’s mining dynamics as mine workers in some situations (e.g., diggers, panners, cooks), license holders, motivators, and petty traders. Mining communities said that diamond mining plays an important economic and social role in the area. Artisanal mine workers reported using diamond incomes to pay for school fees, build houses, purchase motorbikes, invest in business and agriculture, reinvest into mining activities, and to support secret societies in Sierra Leone.¹⁶ Mining also plays a role in food security of the area. Communities report that during the “hunger time” (Sierra Leone’s wet season), rice is brought to their towns because of mining.¹⁷ Researchers were repeatedly told by a variety of sources of mining’s economic and social importance to the region and that there must be constructive and strategic engagement. The mining community members interviewed stated that they wanted to work in harmony with the Park, not against it.

Moving forward, the Nomo rush-mining situation is an immediate priority for Park authorities and the latter community-based mining is a longer-term issue with potential for flash-points between Park staff and mining communities. Authors have outlined the following potential responses to the current artisanal mining situation in and around the GRNP:

- **For community-based mining, it is recommended that the GRNP take a proactive engagement approach in order to contain present-day ASM occurring around the boundary of the Park.** Without technical assistance focused on more efficient mining (e.g. better use of current plots, higher recovery rates, “greener” methods, etc.), ASM will rapidly spread horizontally and likely in the direction of the Park, where communities have indicated there are known diamond locations. Community members have expressed an interest in mining more efficiently to increase their incomes and reduce the physical effort, in learning how to mine without felling trees, and in learning how to rehabilitate mined-out pits and turn them into usable agricultural land for cocoa and other cash crops, etc. There are therefore real synergies between expressed community needs and GRNP goals of protecting the Park, maintaining area forest cover, and promoting local development outside of the Park. Active engagement through, potentially, a co-management model or a more ‘sustainable’ mining¹⁸ pilot site, can achieve win-win outcomes. In this scenario, the GRNP—with outside assistance and support—can influence and monitor mining practices in the area, improve the development outcomes in mining communities through promoting environmental protection, better health and safety in mining, and assist miners in achieving better prices through facilitating basic diamond marketing education trainings, thereby stemming exploitation of miners and the capital flight from the area. This strategy and alternatives strategies are outlined in detail in this report’s section 4.
- **For rush mining, it is highly recommended that the GRNP coordinate with regional bodies and initiatives to address cross-border issues.** Since the GRNP lies on an international border and key border issues remain insufficiently addressed by regional authorities, GRNP will be forced to cope with armed individuals seeking to mine the highly-attractive deposits in the GRNP. Therefore, authors recommend engaging with the Mano River Union and government border authorities to proactively monitor the border crossings. Authors also recommend maintaining the current security arrangements to protect the Park from rush miners, whilst also increasing community engagement and environmental education efforts towards local communities that appear to be assisting the illicit mining activities in the Park. Due to the insecurity of the situation, no other constructive engagement approaches appear to be possible (e.g. ‘managed mining’).
- **In all cases, increased transparency, environmental education outreach, and programmes that make conservation profitable are recommended in order to change the mining-conservation benefit calculus.** Indeed, the GRNP is already responding with such strategies. Researchers observed that some community members did not understand (or claimed not to understand) why the Park is protected and the value that brings. A common refrain was that youth need

¹⁶Participant responses in a workshop of mining area communities on 30 January 2013.

¹⁷Participant responses in a workshop of mining area communities on 30 January 2013.

¹⁸ The word “sustainable” is used very carefully. Mining is inherently unsustainable because it is the extraction of a non-renewable resource. However, “sustainable” is used here to indicate that pilot programme mining would be *more sustainable*, that is, “greener”, than current methods in use. While the precise practices will need to be agreed upon by using participatory methods with miners and mining stakeholders, any intervention would be informed by international best practice. See www.communitymining.org for examples of ‘greener’ mining.

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jobs, mining provides those jobs, and that conservation provides little immediate benefit to area residents. This signals a lack of understanding about the immediate ecosystem services that the Park provides (e.g. preventing flooding, controlling climate and disease, facilitating crop pollination, supporting cultural beliefs, etc.) or the other development projects provided by the GRNP. Increasing local understanding of the immediate benefits of protecting the forest is a critical part of changing the currently skewed mining-conservation benefit calculus that encourages some people to mine the forest instead of protect it.

It is recommended that the next step in this context is to conduct a validation workshop with the mining communities upon which this report focused. The validation should query the accuracy of this report and seek to generate additional recommendations and responses that report authors may have not considered. The meaningful participation of area mining communities and other stakeholders will be essential moving forward. No programme to address the impacts or spread of mining will be successful without their complete participation, approval, and ownership, coupled with the right supports.

This report forms part of the Artisanal and Small-scale Mining in Protected Areas and Critical Ecosystems (ASM-PACE) Programme, a joint initiative between specialist development consultancy Estelle Levin Ltd. (ELL) and global conservation organisation WWF to address the environmental and social impacts of artisanal and small scale mining (ASM) in protected areas and critical ecosystems (“PACE”). The ASM-PACE Programme uses a scientific foundation of knowledge, participatory methods and rights-based approaches to work with miners and their communities, rather than in opposition, to design sustainable, win-win solutions that last.¹⁹ It is within this context that the GRNP invited ASM-PACE researchers to Sierra Leone to investigate artisanal mining in the area and present recommendations on next steps for the GRNP to effectively and constructively respond to the mining occurring around and illegally-within the Park. Authors spoke to a wide range of mining and conservation stakeholders in the Kenema township and Malema chiefdom and visited diamond mining sites in Malema. Based on interviews, focus groups and direct observation, study authors describe the dynamics of mining primarily in the Malema area, the push and pull factors of mining in and outside of the Park, and the perspectives and recommendations of those they interviewed. In addition, recommendations are informed by the local and global experience of the ASM-PACE programme and the research team.

The report is structured as follows: Section 1 of this report presents an introduction to the project goals; Section 2 presents the context and key background information relevant in the Sierra Leone context with regard to conservation and mining; Section 3 presents the history and current dynamics of artisanal mining within and around the GRNP; and Section 4 presents a decision-making framework and recommendations.

¹⁹ More information is available at www.asm-pace.org.

1. INTRODUCTION

This report is a case study containing a situational analysis of artisanal and small-scale mining (ASM) of gold and diamonds in and around the Malema and Nomo areas of Sierra Leone's Gola Rainforest National Park (GRNP).²⁰ This report was invited by the GRNP and is also part of the Artisanal and Small Scale Mining in Protected Areas and Critical Ecosystems (ASM-PACE) Programme, led by a partnership between WWF and Estelle Levin Ltd. (ELL) to support conservation and mining stakeholders manage the issue of ASM in "PACE" locations constructively and sustainably. The project uses a scientific foundation of knowledge, participatory methods and rights-based approaches to work with miners and their communities, rather than in opposition, to design sustainable, win-win solutions. More information is available at www.asm-pace.org.



Figure 1: Gola Rainforest National Park Headquarters in Kenema township, Sierra Leone.

ASM has been an important livelihood across Sierra Leone since the early 1950s.²¹ Artisanal mining²² is generally defined as mining conducted with rudimentary tools such as picks and shovels or simple machinery, usually informal or semi-formal individuals or small groups of people on a subsistence basis.²³ Worldwide, ASM is practiced in more than 70 countries and by around 20-30 million people. ASM produces between 10-20% of the world's annual gold production,²⁴ about 15-20 per cent of mined diamonds,²⁵ approximately 20-25 per cent of mined tin and tantalum,²⁶ and an estimated 80 per cent of coloured gemstones.²⁷ It is by no means a minor phenomenon or a fringe part of the mining sector. In Sierra Leone, it is often coupled with farming as part of an integrated livelihood strategy.²⁸

The GRNP is a 71,000-hectare national park that lies on the south-eastern border of Sierra Leone and Liberia.²⁹ Artisanal gold and diamond mining has been occurring for several decades across the seven chiefdoms hosting the Park today.³⁰ Prior to 2004, ASM was reportedly occurring within some areas of the then-Forest Reserve boundaries, now GRNP boundaries.³¹ Artisanal miners left the reserve in 2004-2005 after conservation agreements were reached with communities to protect this important forest. The incidence of ASM was then significantly reduced in the park until an artisanal gold and diamond rush occurred there in November 2011.

The GRNP was initially selected as a study site based on an invitation from the GRNP coupled with desk-based research by Villegas and Turay indicating that the then Gola Forest Programme (now known as the Gola

²⁰ See www.golarainforest.org

²¹ Greenhalgh, 1985 and Fairbairn 1965 in Levin 2005.

²² Different to small-scale mining. See 'definitions' section.

²³ However, ASM in Sierra Leone is defined by the law according to the depth of mining and methods used (see section 2.2.1 for more detail).

²⁴ Hruschka, F. and Echavarría C., 2011.

²⁵ KPCS, 2008

²⁶ Dorner et al, 2012

²⁷ Lucas, 2011

²⁸ Temple, Levin, Turay, & Renzi, 2005. The 'farming miners and mining farmers' phenomenon in Sierra Leone is well-studied in recent years. For example, see Maconachie & Binns 2007, or Vlassenroot & Van Bockstael, 2011, among many others.

²⁹ Plans are currently underway for the Liberia's Lofa and Foya National Forests to be upgraded to national park status. Once completed, these parks and the GRNP will form a "peace park" with cross-border and joint management components.

³⁰ Town chief and female town elder in Japowahun on 26 January 2013 with Villegas, Turay, and Sarmu. Personal communication between Babar Turay and an anonymous town elder in the region, September 2011. Swire (2001) also refers to the long-term nature of ASM in the Gola Forest area, referring to it being practiced for "decades" and Richards (1996) describes mining within the Park in the 1990s.

³¹ Personal communication between Babar Turay and Manna Swaray, September 2011; Personal communication between Villegas, Turay and GRNP's Tamba Vandi in January 2013.

Rainforest National Park Programme) could be a “Best Practice” model for ASM management in a national park context given its success in reducing activity within the Park and its community engagement model. However, in November 2011, the Park began to experience organized incursions of, often armed, illegal artisanal miners in some areas of the Park who were mining at night and allegedly seeking gold and yellow diamonds. ASM is thus a concern for GRNP managers, and this is the reason why a call was made for expert advice and recommendations.

This study provides an overview of ASM management to date in and around the GRNP, describes the contemporary challenges with illegal ASM, and provides recommendations moving forward that could help resolve current problems that occur in restricted areas within the Park boundaries as well as help resolve unsustainable practices in the immediate surroundings of the GRNP. The study investigates the key motivations of contemporary ASM miners, potential pull and push factors, as well as local ASM dynamics in park-adjacent communities. It is intended that the lessons learned from this study will inform future strategies by the Gola Rainforest National Park Programme and its partners in the GRNP, elsewhere in Sierra Leone, and potentially in other countries.

It should be noted that the vast majority of the published information on ASM in Sierra Leone pertains to diamonds. Artisanal gold mining has been largely invisible due to the perception that it is not a hard economic activity, but instead a subsistence activity, and one that has predominantly been done by women until recent years. In fact, gold mining may well predate diamond mining in the country, given the importance of gold to cultures across West Africa.³² As a result, while authors made significant effort to balance the research, artisanal diamond mining is the dominant type of ASM featured in this report.

1.1 Important definitions and distinctions

“Artisanal and Small-scale Mining”

Within the mining sector, there is a surprising lack of consensus on the precise definition of “Artisanal and Small-scale Mining” (ASM). For the purposes of this study, however, ASM-PACE defines ASM as mineral extraction characterized by low levels of mechanisation and capitalisation and high labour intensity. It is usually done by local miners for the purpose of creating local livelihoods or subsistence or as small businesses, or at group or individual level. It is often done in the pursuit of creation of (self) employment and often in conditions of informality. Within this report, the authors will be specific to note where artisanal mining is occurring with more advanced mechanisation.

There are a number of ways to classify the various sub-types of ASM. Weber-Fahr ³³ describes four sub-types, choosing to classify it by frequency and motivation:

- *Permanent ASM* – This refers to ASM as a full time, year round activity. Mining is frequently the primary economic activity for the community and is sometimes accompanied by other activities like farming or herding.
- *Seasonal ASM* – This refers to ASM taking place during specific times of the year due to seasonal alternating of activities or seasonal migration of people into artisanal mining areas.³⁴ For example: In some parts of Africa, farmers mine during idle agricultural periods to supplement their annual incomes. Note: It is possible to have a situation of both permanent and seasonal ASM on the same site.
- *Rush-ASM or “rush mining”* – This refers to large migrations of artisanal and small-scale miners to an ASM site within a short period of time based on speculation and the hope of large potential incomes. Miners are usually not residents of the area.
- *Shock-push ASM* – This refers to when ASM is a poverty driven activity emerging after recent loss of employment in other sectors, conflicts or natural disasters. For example: In a situation of economic collapse of a state or sudden displacement due to civil war, people may turn to ASM because it gives them immediate cash with very low barriers to entry. ASM offers them income in an otherwise desperate situation with few if any realistic alternatives.

³² Gold mining and trading has been occurring for in West Africa for more than one thousand years. See Hilson, 2002.

³³ Weber-Fahr et al (2002)

³⁴ Weber-Fahr et al (2002)

Within Sierra Leone, ASM is often classified by mine site location (e.g. terrace mining or swamp/lowland mining) or type of workforce (e.g. “gado mining” or “licensed mining”). The structure on ASM sites in Sierra Leone is described in this report’s Section 2.

For the purposes of this report, the catch-all term of “ASM” will be used sparingly. In Sierra Leone, there is a significant distinction drawn between artisanal mining and small-scale mining. In the areas of study, artisanal mining was the dominant form of ASM. For example, in the Kenema District there is only one licensed small-scale mining operation and more than 300 artisanal licenses. Artisanal mining is characterized by the use of rudimentary methods, whereas small-scale mining is on a bigger scale of several plots and using advanced equipment. As compared to small-scale mining, artisanal mining involves shovels and machetes; small-scale mining involves bulldozers and dump-trucks.

“Miners” and “Diggers”

Within the larger ASM sector, the term ‘miner’ generally refers to any person involved in artisanal and small-scale mining.³⁵ However, in Sierra Leone (and Liberia as well), there is an important distinction between these terms on the ground. The term “miner” usually refers to the legal license holder of the artisanal mining concession or the mine manager (foreman). The “digger”³⁶ or “tributor” typically refers to the person who does the physical labour to recover the mineral and is either employed by the miner or works informally as an individual or in small groups called “gangs”. In Sierra Leone, the “miner” rarely does the physical work of mining.

1.2 Methodology

Initial desk-based research by Villegas and Turay was undertaken in August-September 2011 for the purpose of rapidly scoping the issue of ASM in protected area and “critical ecosystem” locations³⁷ in Sierra Leone as part of



Figure 2: Participatory multi-village workshop held in Japowahun, Sierra Leone, in January 2013.

the ASM-PACE Programme’s Global Solutions Study.³⁸ Research at the time was based on in-country interviews of miners, community members, and the professional experience of Babar Turay, who has studied the issue in Sierra Leone for more than a decade. ASM occurring in the Gola Forest region, in Outumba Kilimi National Park (OKNP), and around Lake Sonfon³⁹ were the foci of the initial desk study. The Gola Rainforest National Park Programme was selected for a special focus based on its success at the time in managing ASM within the GRNP. ASM-PACE’s Cristina Villegas met with Nicolas Tubbs, Tropical Forest Conservation Manager for the Royal Society for the Protection of Birds (RSPB), a member of the partners for the GRNP alongside GoSL and CSSL, in August 2012 and Tubbs raised the issues of ASM encroachment

into the GRNP that had occurred in November 2011, shortly after the initial desk study was completed by Villegas and Turay. Tubbs shared the view that it would be timely for the ASM-PACE Programme to study the GRNP model and to conduct an independent scoping mission of the ASM situation with the GoSL and the Park’s facilitation and GRNP staff support in January and February 2013 to come up with a series of recommendations to the GRNP partners.

³⁵ Per the Alliance for Responsible Mining (ARM) definition.

³⁶ It is important to note that “digger” can be a pejorative term in some country contexts.

³⁷ A “critical ecosystem” as defined by ASM-PACE is a place that is not a protected area but it is a WWF Priority Place or it is one of the Global200 Priority Ecoregions as defined by Olson & Dinerstein (2002).

³⁸ See Villegas et al., 2012.

³⁹ Unlike the GRNP and OKNP, Lake Sonfon is not a protected area but it is a “critical ecosystem”.

Field work was conducted by Villegas and Turay from 21 January 2013 to 8 February, 2013. They were joined in the Kenema and Kailahun Districts by Daniel Sarmu. Research focused on the Kenema District and the Tonkia, Nomo, and Nongowa chiefdoms therein, and in the Malema chiefdom within the Kailahun District, based on known ASM occurring there. Field work within the mining affected Nomo section of the GRNP was not possible due to legitimate security concerns by the GRNP management (see section 3); characterisation of the mining activity there is therefore based largely on third party accounts. Local communities in Malema were visited by Villegas, Turay, Sarmu, and the GRNP's Community Development & Relations Officer Fomba Kanneh. While Kanneh's presence may have negatively impacted the candour of respondents due to his employment with GRNP, based on the interaction between them, authors do not believe this is the case based on his obvious positive ties to the communities. Research in Kenema and Malema were primarily conducted in the Mende and Krio languages thanks to Turay and Sarmu's fluency in both. Quotes noted in this report were generally translated into English from Mende. English was the main language in use for all other research locations. The research team spoke to a wide-range of mining and conservation stakeholders.

It is important to note that this was a scoping visit intended to quickly understand the key issues and challenges in a limited area of the Gola Forest region; it was not a full scientific baseline study, which requires significantly more time and financial resources. Methods included semi-structured interviews, transect walks, focus groups, and a multi-community workshop, the participants of which were partially selected by the research team and partially nominated by their community leadership. Also importantly, researchers profiled artisanal mining in a context of active arrests for illegal miners found within Park boundaries. As a result, there was some predictable hesitancy in interview settings to admit to having mined in Park boundaries. Others would only agree to speak to researchers on the condition of strict anonymity or where no direct quotes were allowed.⁴⁰ Finally, researchers used a gender-sensitive research approach to probe specifically about women's role in the mining dynamics of the area.⁴¹

Permission was granted to conduct fieldwork by the Paramount Chiefs of Kenema and Malema respectively, along with the prior consent of senior management at the Sierra Leonean Ministry of Mineral Resources (MMR); Environmental Protection Agency (EPA), the Ministry of Agriculture, Forestry, and Food Security (MAFFS), and in close coordination with the GRNP Programme.

Artisanal mining in Sierra Leone is notoriously secretive, particularly about production levels and locations. In this context, researchers tried to triangulate the truth whenever possible and compared responses with known trends. Report authors are clear of the source of all material and have taken the above constraints into consideration in their analysis. The information gathered from communities is not yet validated, but communities will be receiving a copy of the report once it is published and validation can occur at that time. The validation would likely be the starting point for any further work on this issue in the Gola Forest region by the ASM-PACE programme in partnership with the GRNP.

The maps found within this report were created by GRNP and ELL staff using publically available data, proprietary data gathered by GRNP staff, and GPS points collected in the course of fieldwork by Villegas and Turay.

1.3 Research limitations

Research was limited by the following factors: (1) A short period of time (17 days) for field research due to budgetary constraints, resulting in field work with only a limited number of communities. As such, this report is a "snapshot" of the situation and not a baseline assessment or holistic survey; (2) An atmosphere where mining within the park is known by interviewees to be illegal. It was clear that this affected interviewees' candour with outside researchers; (3) There is a consensus amongst government and other researchers that the vast majority of artisanal mining in Sierra Leone is informal and not officially registered with the government. As a result of this and other reasons, the government's mining cadastre only captures a small portion of the total ASM sites in Sierra Leone.⁴² Random sampling was therefore not possible and researchers visited sites based on those known to the GRNP and where access was possible within a short research timeframe; (4) Researchers were not able to visit artisanal sites located within the GRNP due to security concerns that were ultimately proven to be valid⁴³;

⁴⁰ For example, no quotations were one of the rules set by the communities in the multi-community workshop. This has been respected by researchers.

⁴¹ For a variety of reasons, in professional and academic research generally, women's roles in artisanal mining is often under-reported.

⁴² Furthermore, government's official online cadastre – launched in 2012—is already out of date.

⁴³ During the weekend following researchers' visit, GRNP forest guards were ambushed by miners in the ASM-affected area of the Park.

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researchers therefore had to rely on witnesses and third-party accounts, although they were able to identify one illegal miner and interview him at the Kenema District Prison, but in circumstances that were less than ideal⁴⁴; (5) Illegal artisanal mining activities in protected areas is dynamic precisely because it is illegal. Therefore, all data collected is a 'snapshot in time'; it was correct at the time it was taken.

Finally, the research team of Villegas, Turay, and Sarmu were working with the cooperation and occasional presence of GRNP staff. While researchers were cautious to present the purpose of the trip as independent and for research purposes only in order to not raise the expectations of a programmatic intervention, the fact that GRNP has active community development programmes in the Gola Forest area and from which the communities benefit may have positively or negatively affected some community members' level of candour.

⁴⁴ See this report's section 3.4.1.

2. BACKGROUND INFORMATION



Figure 3: Map of Sierra Leone including its major protected areas in grey. The greater Gola Forest is shown here in light green; the Gola Forest National Park (GRNP) protects part of the larger Gola Forest and is indicated in dark green.

The Republic of Sierra Leone is a country in coastal West Africa. It covers an area of 72, 325 km² and has a population of 6.2 million people.⁴⁵ It shares borders with Guinea on its north and east and with Liberia to its southeast. Its environment ranges from beaches and mangrove swamps along its 400 km of coastline, low-lying wooded land in its interior, to rainforests in the southeast.⁴⁶ It has a tropical climate with rainy season from June to October.

Sierra Leone is a post-conflict state. Its civil war ended in 2002, having been preceded by a long period of instability. The ‘Conflict Diamond’ advocacy and consumer campaign of the 1990s started with evidence that ‘blood diamonds’ were prolonging Sierra Leone’s civil conflict.⁴⁷ However, despite its rich mineral wealth, some 57 per cent of the population lives on less than a dollar a day; approximately 74 per cent live on less than US\$2 a day.⁴⁸ Poverty is concentrated in the rural areas. For example, about 22 per cent of Freetown’s population is estimated to live below the poverty line, compared to 79 per cent of people in rural areas.⁴⁹ Sierra Leone

ranks at 176 of the 187 countries in the United Nations’ (UN) Human Development Index;⁵⁰ however, this is an improvement from a decade ago, when it was ranked last of 179 countries.⁵¹ This stated, Sierra Leone is now one of the fastest growing countries in Africa. The World Bank expects an economic growth rate of 10.2 per cent in 2013.⁵² Youth unemployment is one of its most persistent problems.⁵³ With youth unemployment at 60 per cent, it is the highest in West Africa⁵⁴ and a frequent topic of conversation and concern.⁵⁵ Adult literacy in 2011 was estimated to be at 40.9 per cent; in 2011, life expectancy at birth is 47.8 years.⁵⁶

⁴⁵ UK FCO, 2010

⁴⁶ UK FCO, 2010

⁴⁷ Maconachie, 2008

⁴⁸ UK FCO, 2010

⁴⁹ World Bank, 2013.

⁵⁰ World Bank, 2013.

⁵¹ IRIN, 2008.

⁵² World Bank, 2013

⁵³ Peeters and Cunningham (2009)

⁵⁴ World Bank, 2013.

⁵⁵ This issue of youth unemployment was consistently cited by interviewees from local and national government, traditional chieftdom authorities, local communities, etc. A report in 2010 by the United Nations Environment Programme (UNEP) comments that “many of the conditions for conflict that existed before 1991 persist today, including youth unemployment and rural marginalization. In some cases they have been aggravated by concerns about opaque bureaucracy, corruption and the unfair distribution of the benefits from natural resource extraction”. From UNEP, 2010.

⁵⁶ UNDP 2011 as cited in Brown & Crawford, 2012.

2.1 Conservation Context

As of the 1500s, almost half of Sierra Leone was forested;⁵⁷ however most of Sierra Leone's forests are now gone outside of the protected areas.⁵⁸ Most of Sierra Leone's fifteen protected areas were recommended for protected status in the 1970s and 1980s, following a National Development Plan process which revealed "the lack of a comprehensive environmental database was hindering attempts to stimulate productive and environmentally sound agricultural developments."⁵⁹ The 1972 Wildlife Conservation Act (1972) established three categories of areas for wildlife protection, namely nature reserves, national parks or game reserves, and game sanctuaries.⁶⁰ Non-hunting reserves were later established, as were areas specifically set aside to preserve certain types of fauna and flora.⁶¹ National parks are afforded the highest level of protected status. As of 2001, just less than 4 per cent of the country is forest reserves, approximately 2.3 per cent of which are rainforest.⁶² In addition to Sierra Leone's 295,950 hectares of protected forests, game reserves and national parks, there are approximately 32,000 hectares of community forest.⁶³ There are two types of forests in Sierra Leone: Tropical Moist Evergreen Forest and Moist Semi-deciduous Forest. The former is found in the south-east of the country and the latter is in the northern part of the country.⁶⁴ The main threats to Sierra Leone's remaining forests now include: agricultural expansion, logging, charcoal and firewood production, wildlife trade for bushmeat, and mining (industrial and artisanal).⁶⁵

2.1.1 Conservation Governance

The Conservation and Wildlife branch of the Division of Forestry within the Ministry of Agriculture, Forestry, and Food Security (MAFFS) has the responsibility to manage Sierra Leone's protected forest estate. Other conservation and mining stakeholders within the government include: the Ministry of Mineral Resources (MMR), which is responsible for allocating mining concessions and licenses⁶⁶ (see section 2.3 for instances where licenses and protected areas have overlapped); the Environment Protection Agency of Sierra Leone, which is responsible for coordinating environmental policies and programmes throughout the country; the Ministry of Lands, Country Planning and the Environment, which oversees land-use planning and coordination; and the Ministry of Tourism, which has a stake in the management of the country's protected areas. At the local level, traditional authorities (e.g., chiefs), village development committees, local councils, and district-level forestry authorities also play an important role in the management of protected areas. Enforcement capacity is an issue that both MAFFS and the MMR acknowledge.⁶⁷ It therefore heightens the importance of local engagement and "buy-in" of forest-edge communities, as well as others that may eventually impact the parks.

There are three national parks in Sierra Leone: the Outamba Kilimi National Park (OKNP) in the north of the country, the GRNP in the south-east, and the Western Peninsular National Park next to Freetown, the capital. Outside of Non-Timber Forest Products (NTFP), there are no economic activities allowed within national parks except for tourism unless special permission is granted by the President or by the Chief Conservator of Forests. Sierra Leone's government recently created the National Protected Area Authority (NPAA), which will eventually have lead authority over the country's protected area network.

2.1.2 Environmental laws

Sierra Leone has several important environmental laws that include:⁶⁸ Forestry rules (1942; 1946; 1955); Forestry Ordinance (1960); Forest Industry Corporations Act (1992) as amended (1990); Fisheries Control and Preservations Act (1932); Wildlife Conservation Act, 1972; Forestry Act (1988); Mines and Minerals Act (1994); National Environment Protection Act (2002). The Wildlife Act and the Forestry Act are currently under review by the GoSL. Sierra Leone has signed or ratified the following international treaties, conventions, and instruments:⁶⁹ Convention on Biodiversity (CBD); United Nations Framework Convention on Climate Change (UNFCCC); United Nations Convention to Combat Desertification (CCD); Convention on International Trade in Endangered

⁵⁷ Swire, 2001

⁵⁸ Swire, 2001

⁵⁹ Swire, 2001

⁶⁰ Swire, 2001

⁶¹ Swire, 2001

⁶² Swire, 2001

⁶³ Convention on Biological Diversity

⁶⁴ Convention on Biological Diversity, 2008

⁶⁵ Convention on Biological Diversity, n.d.

⁶⁶ The Ministry of Mineral Resources is responsible for environmental rehabilitation of artisanal mining sites. This is partially funded by a fee in which legal artisanal and small-scale miners pay to the state for this service. In practice, state-run environmental rehabilitation does not appear to be taking place.

⁶⁷ Interviews with MAFFS and Freetown and Kenema-based MMR staff people in the course of field research.

⁶⁸ Convention on Biodiversity, 2003

⁶⁹ Convention on Biodiversity, 2003

species of Wild Fauna and Flora (CITES); Convention on Wetlands of International Importance (Ramsar); Convention on Biosafety; United Nations Convention on the Law of the Sea; Basel Convention; and the Vienna Convention and Montreal Protocol (ozone).

2.2 Mining in Sierra Leone

Sierra Leone is one of the top-ten diamond producing countries in the world by production.⁷⁰ The country exported US\$124 million worth of diamonds in 2011; in volume, this is 357,000 carats and an average value of US\$347 per carat.⁷¹ Diamonds are more or less evenly split between industrial and gem quality; statistics between 1999 and 2003 show that 54 per cent of diamond exports were industrial-grade while 46 per cent were gem quality.⁷² The mining sector, which is dominated by diamonds, accounts for 90 per cent of export revenues, is the country's top source of foreign exchange,⁷³ and represents some 20 per cent of the gross domestic product (GDP).⁷⁴

Diamonds were discovered in Sierra Leone in December 1929 and early 1930. Since 1935, more than 14 million carats of diamond are estimated to have been mined.⁷⁵ In addition, Sierra Leone is the world's third leading producer of rutile (titanium), and it also produces bauxite (aluminium), cement, gold, and ilmenite (iron & titanium).⁷⁶ There is reportedly also potential for platinum, chromite, molybdenite, and iron ore production.⁷⁷ Overall, Sierra Leone's minerals sector remains export oriented and with little to no value-addition in-country.⁷⁸

The 2009 Mines and Minerals Act vests all rights of ownership in and control of minerals to the Sierra Leonean state. The Ministry of Mineral Resources and Political Affairs is responsible for the law's implementation, which it does through the Minister of Mines and the Director of Mines.⁷⁹ The 2009 law also created a Minerals Advisory Board, which is mandated to advise the Minister of Mines on "matters relating to minerals, including reconnaissance, exploration, mining, processing, import and export, and the marketing of minerals; monitoring the implementation of every Government policy relating to minerals; granting applications for mining licenses, and renewing, suspending, transferring, and cancelling licenses, among other tasks."⁸⁰ The Minerals Advisory Board includes representatives of various government agencies, mining industry experts, civil society (appointed by an independent coalition of civil society organizations in Sierra Leone), the police, and Paramount Chiefs.⁸¹

Per the new law, applications for mineral rights are to be submitted to the Mining Cadastre Office along with an application fee. There are five types of mining licenses: reconnaissance license, exploration license, artisanal mining license, small-scale mining license, and large-scale mining license.⁸² Requirements for legal artisanal mining are described in this report's section 2.2.1.2.

2.2.1. Artisanal Mining

Artisanal miners in Sierra Leone primarily mine diamonds and gold. Historically, approximately 80-90 per cent of diamond mining in Sierra Leone has been done artisanally (by production).⁸³ Artisanal diamond mining has historically employed 10 per cent of the country's workforce.⁸⁴ It is currently estimated to directly employ between 200,000 and 300,000 workers (miners and diggers) of gold and diamonds.⁸⁵ Including dependents and those indirectly employed, ASM of diamonds and gold provides income and indirect livelihoods for an estimated

⁷⁰ Kimberley Process, 2011

⁷¹ Kimberley Process, 2011

⁷² In Coakley, n.d. However, statistics may have been skewed as the war did not end until 2002, and Liberia was smuggling destination for higher quality Sierra Leonean stones.

⁷³ Bermúdez-Lugo, 2009

⁷⁴ Bermúdez-Lugo, 2009

⁷⁵ Coakley, n.d.

⁷⁶ Gambogi, 2010; Kimberley Process Rough Diamond Statistics, 2010, in Bermúdez-Lugo, 2009

⁷⁷ Maconachie, 2008; USDA Forest Service International Programs, 2007

⁷⁸ Schwartz, 2006, p. 38

⁷⁹ Bermúdez-Lugo, 2009

⁸⁰ Bermúdez-Lugo, 2009

⁸¹ Ministry of Mineral Resources and Political Affairs, 2009, p. 15-17 in Bermúdez-Lugo, 2009

⁸² Bermúdez-Lugo, 2009

⁸³ As cited in Maconachie, 2008 and Coakley, n.d.; however, this number is likely to be materially different today. In 2008, the market for diamonds fell dramatically, sending prices down and driving some miners to leave the sector. At the same time, the emergence of industrial operators are also likely to have decreased the share of ASM production of national output. The authors are unaware of new estimations of artisanal diamond production.

⁸⁴ DDI International, 2008

⁸⁵ See "Creating an Enabling Policy Environment in Sierra Leone" (CEPESL), GoSL 2011.

900,000 people.⁸⁶ By contrast, an estimated 38,000 of Sierra Leoneans are estimated to be employed directly or indirectly by industrial-scale mines, meaning that an estimated 300,000 people depend on these mines for their livelihoods.⁸⁷ Ninety per cent of the gold mining workforce is artisanal miners. ASM occurs in every government district, and in more than 80 of the country's 149 chiefdoms.⁸⁸

The government officials responsible for mining and the traditional authorities with whom the research team spoke acknowledged that ASM plays an important role in Sierra Leoneans' livelihoods. The common refrain was: *'There is a lack of formal employment in Sierra Leone and people turn to artisanal mining for their livelihoods.'*⁸⁹

Most artisanal diamond mining occurs in the November to May dry season; "washing" – the process by which diamonds are sifted from diamond-bearing gravel—typically occurs in May and June.⁹⁰ Mining is restricted in these months due to cost and productivity reasons, as the rains flood lowland pits and it would require costly inputs and significantly increased food, shelter, labour, fuel, equipment, and other costs to continue during the rains.⁹¹ Moreover, most labourers shift to agricultural activities when the rains begin as part of an integrated livelihood strategy.⁹²

While the vast majority of the diggers in the diamond pits are men, women are involved as well but to a limited extent, due to cultural norms, spiritual beliefs, discrimination, and prejudice regarding their land rights.⁹³ More often, women play an important role in diamond mining areas via their role in trading and farming that further contributes to the family's income and food security.⁹⁴ Women are traditionally directly active in artisanal gold mining⁹⁵, which, until recently, received little attention. For women, it is "slow cash, although a sure one."⁹⁶ Gold mining can be a full time job or a means to an end. Some women use the income from gold mining to raise funds to start a business, such as petty trading. Others can get into the loan business, where they advance products such as cigarettes, alcoholic drinks, food stuffs, etc. in exchange for gold earned by miners.⁹⁷ Women's roles in the mining in the Gola vicinity is described in this report's section 3.4.2.

The biggest artisanal diamond producing areas are in Bo, the Kenema, and Kono districts⁹⁸ from the Bafi, Mano, Moa, Sewa, Woa, and Woyie Rivers and their tributaries.⁹⁹ The country's known alluvial mining fields span an area of approximately 20,000 square kilometres; however the diamond-bearing alluvial ground is only about 200 km.²¹⁰⁰ The drop in diamond prices in 2008 reportedly drove many artisanal miners to switch to gold mining or subsistence farming.¹⁰¹

Diamonds have played a significant role in much of Sierra Leone's contemporary history. The precious stones have been used in recent Sierra Leonean politics to finance political parties or warring militias.¹⁰² In its most recent civil war, while diamonds were not the reason for its start, many observers agree that control over the diamond fields—particularly Kono District and Tongo Fields in Kenema District—complicated and then prolonged the conflict.¹⁰³ Due to the role of diamonds in the conflict, there remains sensitivity in the Gola Forest region—where the war began—regarding artisanal mining.

⁸⁶ See Le Billon/Levin 2009, p. 703-704.

⁸⁷ GoSL, 2011.

⁸⁸ GoSL, 2011.

⁸⁹ Interviews done in the course of field research in January and February 2013.

⁹⁰ Temple, Levin, Turay, & Renzi, 2005

⁹¹ Temple, Levin, Turay, & Renzi, 2005; Levin, 2005.

⁹² Temple, Levin, Turay, & Renzi, 2005; Levin, 2005; Maconachie & Binns 2007a; or Vlassenroot & Van Bockstael, 2010.

⁹³ Temple, Levin, Turay, & Renzi, 2005

⁹⁴ For more on the role of women in artisanal diamond mining in Sierra Leone, see Temple, Levin, Turay, & Renzi, 2005, and Levin 2005. These roles were mentioned also by the Malema Mami Queen.

⁹⁵ Temple, Levin, Turay, & Renzi, 2005

⁹⁶ Personal observation, Babar Turay based on previous research. September 2011.

⁹⁷ Personal observation, Babar Turay based on previous research with this group. September 2011.

⁹⁸ Bermúdez-Lugo, 2009 and Maconachie, 2008

⁹⁹ Bermúdez-Lugo, 2009

¹⁰⁰ Maconachie, 2008

¹⁰¹ Bermúdez-Lugo, 2009; Pijpers, 2011.

¹⁰² For example, the Siaka Stevens All Peoples Congress (APC) regime that ruled from 1968 to 1985 initially built its power through taking over small-scale diamond mining in Kono (Reno, 1998 and Zack-Williams, 1995 in Swire, 2001). In the most recent civil war, civil defense forces allegedly took part in large-scale mining activities (Swire, 2001).

¹⁰³ Temple, Levin, Turay, & Renzi, 2005

2.2.1.1 Artisanal mine site structure

In Sierra Leone, there are a variety of roles on a mine site:

- The “artisanal miner” is the person who holds the legal license to mine in that area.
- The “tributor” or “digger” or “worker” is the person who does the physical labour. In other countries they are often called miners but in Sierra Leone and Liberia, there is an important distinction in vocabulary. A group of tributors is called a “gang”; for diamond mining, this is usually between 5-10 people.
- The “financier” or “supporter” or “investor” is the person providing the financial support to the site (e.g., paying workers, buying equipment, providing two meals a day). This person usually receives a significant portion of the “winnings”, which is the value of the diamond.
- The “buyer” of any diamonds in some cases is the financier; in some cases could be a dealer in town, or a “nyeko-nyeko”¹⁰⁴, who is an informal dealer that operates in the shadows of the law.

Payment structures depend on the mine site. In some cases, diggers receive a daily wage and food ration and receive no share of the finds; in this case they are hired purely as labourers. However, the more common scenario in Sierra Leone is where diggers receive a daily wage, a food ration, and a share of any winnings. The typical sharing agreement gives 40% of the winnings to the financier, 30% of the winnings to the landowner, and 30% of the winnings for the diggers to share amongst themselves.¹⁰⁵ This sharing does not always occur in an equal manner; often it is dependent on the skills of the diggers. Those diggers who can brush, dig, and pan receive a higher share of the divided winnings than those who can only do one or two of these functions. These inexperienced workers are referred to as ‘half shovels’.¹⁰⁶ In the sites visited by the research team, diggers were paid a daily wage, fed twice per day, and followed the 40/30/30 division system.¹⁰⁷

In the legal mining communities in Malema chiefdom, as elsewhere in Sierra Leone, there are also voluntary governance structures in the form of an area Mining Committee. This is to ensure smooth artisanal mining operations in the area, prevent bullying, and make sure details and operations are properly arranged. The mining chairman is elected, along with a deputy. Mining committees are present at the township, section, and chiefdom levels. Problems and disputes are handled first at the local level (township), and then escalated as appropriate and as needed, with the highest informal authority being the district-mining committee. In the formal system, disputes are first handed first with the Mines Monitoring Officer (MMO) and escalated as needed to the Mines Warden, Mining Superintendent, and finally the Area Mining Engineer.¹⁰⁸

2.2.1.2 Artisanal Mining Governance

To work legally in the diamond sector, there are five different types of licenses involved, depending on one’s role in the supply chain:

- Artisanal miner: This license is needed in order to have a legal artisanal gold or diamond mining site. Only Sierra Leonean nationals can hold an artisanal mining license.
- Mine managers: This type of license is needed in order to monitor and manage material and human resources at the mining site. Both the land owner and the financier can have their representatives at the site as managers.
- Dealers: This type of license is needed in order to buy diamonds from the mine sites. Dealers can also finance the mining operation. This is the most common scenario in Sierra Leone.
- Dealer’s agent: This type of license is needed in order for individuals to serve as middle men. They often negotiate the initial price and lead the seller to a dealer or potential financier.
- Exporter: This type of license is needed in order to buy diamonds from dealers, take the stones to Government Gold and Diamond Office (GGDO) for valuation, deduction of taxes, and eventual export of the diamonds. The exporters are also sometimes financiers to dealers and financiers to miners.

¹⁰⁴ This is a Mandingo word for “I stand behind you”. This word is presumably to communicate friendship between the nyiko-nykos, however their shops are known locally as “openyaeyes”, as in be careful because you might be taken advantage of. The benefit of doing business with nyiko-nyiko traders is that it is unofficial and skipping the paperwork makes the transaction very quick.

¹⁰⁵ Based on interviews conducted in the course of field research.

¹⁰⁶ According to Sarmu and Turay.

¹⁰⁷ Blore, citing research by Levin 2005, in Vlassenroot & Van Bockstael.

¹⁰⁸ Community meeting in Jappowahun village on 26 January 2013 and informal discussions with Sarmu and Turay.

It is important to note that there is no license to be a digger/tributor. No data is collected on this population; this represents a major gap in knowledge that could be used to make mining more developmental. Information gathering is therefore recommended, followed by a needs assessment with this population on what supports they may require to help them out of poverty.

Artisanal Mining Licensing Process in Sierra Leone

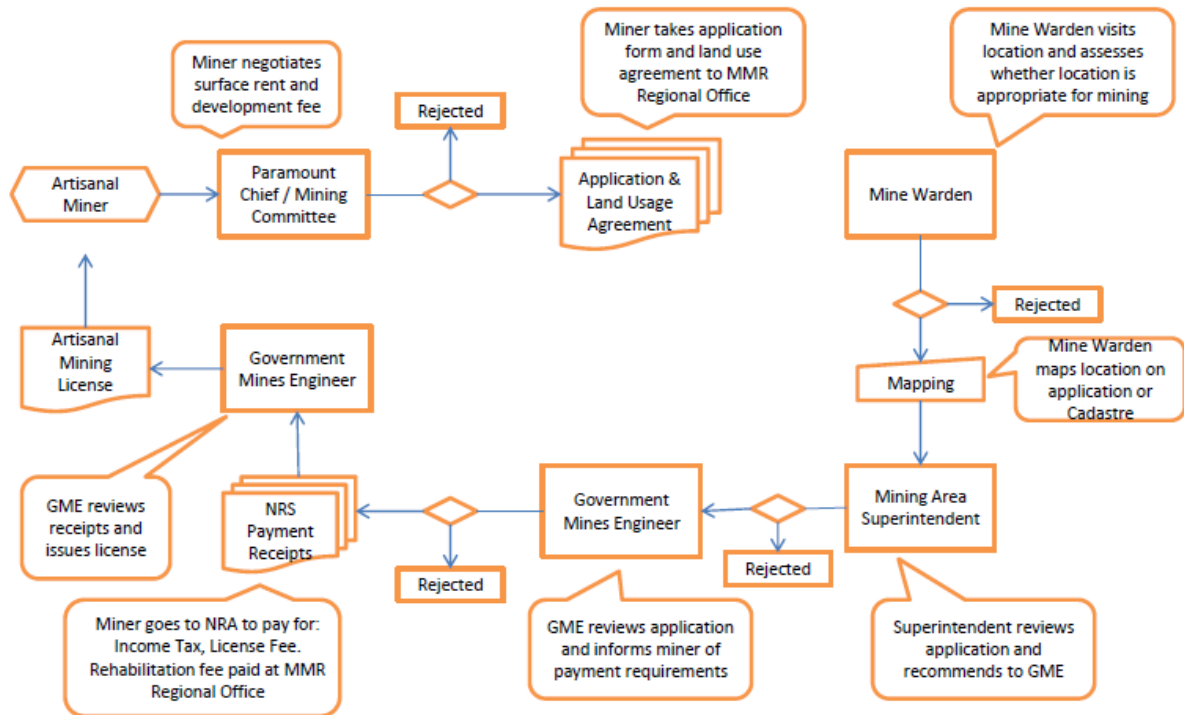


Figure 4: The chart above shows the path to legality. Source: Content courtesy of GIZ and reproduced with permission.

Applicants for artisanal mining licenses must first apply for the right to mine on their land by approaching the Chiefdom Mining Allocation Committee, which has the authority to grant ‘surface rights’ permission at chiefdom level. Then applicants go to the District-level Mines Monitoring Office (MMO) with the required documentation. Amongst the documentation required are bank-deposit receipts showing that the appropriate fees have been paid into the appropriate state-run bank account¹⁰⁹, and a certified written agreement “between the applicant and the Chiefdom Mining Allocation Committee or the rightful occupiers or owners of the land over which the artisanal mining license is granted.”¹¹⁰ The artisanal mining license can cover up to one-half hectare and is valid for one year; it can be renewed up to three times, which means a site can be mined for up to four years in total.¹¹¹ Artisanal licenses are usually 210 feet by 210 feet, which is a perfect square.¹¹²

Applicants for an artisanal diamond license, one must be either:

- a citizen of Sierra Leone; represent a cooperative society registered in Sierra Leone and that is solely made up of Sierra Leonean citizens;
- represent a joint venture or partnership registered in Sierra Leone whose participants are citizens of Sierra Leone only;

¹⁰⁹Personal communication between Villegas, Turay, and Sahar Tamba, District Mining Engineer for Kenema, on 28 January 2013.

¹¹⁰Bermúdez-Lugo, 2009; Personal communication between Villegas, Turay, and Sahar Tamba, District Mining Engineer for Kenema, on 28 January 2013.

¹¹¹ Ministry of Mineral Resources and Political Affairs, 2009, p. 57-58 in Bermúdez-Lugo, 2009

¹¹² Personal communication between Villegas, Turay, and Sahar Tamba, District Mining Engineer for Kenema, on 28 January 2013.

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- represent a corporation incorporated or registered in Sierra Leone and with all shareholders being citizens of Sierra Leone.¹¹³

The restriction to Sierra Leonean nationals is to build on the artisanal sector's capacity to create jobs.¹¹⁴ The government wants these jobs to go to Sierra Leoneans. Artisanal miners are only allowed to mine gold and diamonds;¹¹⁵ mining of coltan or other minerals is not legally provided for, but it has been observed.¹¹⁶

The artisanal diamond mining (ADM) license costs Le 646,000 total (approximately US\$150), which comprises of the following fees:¹¹⁷

Le 250,000 for the license itself
Le 150,000 for the environmental rehabilitation fee
Le 100,000 for the mines monitoring fee
Le 96,000 income tax

If the person is a first-time applicant, a Le 40,000 fee applies.

A renewal ADM application costs Le 606,000, a new artisanal gold mining (AGM) application is Le 360,000 and a renewal AGM costs Le 320,000.¹¹⁸ A financial supporter certificate costs Le 50,000.

Under this system of sub-fees, the MMR is supposed to rehabilitate artisanal mining sites. However, this is rarely done in practice. The explanation given to researchers is that the fee is insufficient for the work required, but this raises the question of why the fee is collected in the first place if the work is not performed. Furthermore, it is unclear where it has been spent to date.¹¹⁹

There have been many NGO and donor initiatives in the ASM sector in Sierra Leone; the most notable of which are the Integrated Diamond Mining Programme (IDMP) for its comprehensive work on improving capacity and transparency in the sector; the Foundation for Environmental Security and Sustainability (FESS) for its environmental rehabilitation work; the Diamond Area Community Development Fund for encouraging formal mining (discussed below); and the Peace Diamond Alliance, for spearheading the development of cooperatives (and which was part of the IDMP).

On the ground (at the chiefdom level), it appears in practice that one of the most important incentives for artisanal diamond mining to be legal is the Diamond Area Community Development Fund (DACDF). The DACDF pays Paramount Chiefs by the number of legal licenses that are registered in their chiefdom and the quality of diamonds found there, thereby financially incentivizing chiefs to promote legality and mining. The more licenses there are in their district, the more Paramount Chiefs are paid. However, in practice, it appears that this system produces skewed incentives for Paramount Chiefs to continue to reauthorize mining on sites that have been mined-out, causing frustration to those seeking to mine legally, having gone through the legal systems and invested money in surface rents, license fees, diggers, and equipment, only to find that there are no diamonds in that plot.¹²⁰ Moreover, there is no provision in the DACDF scheme to incentivize traditional authorities (e.g., Chiefs) to encourage legal diamond *trading*.¹²¹

In 2009-2010, there was a national consultation effort to create the government's Artisanal Mining Policy (2011). According to the Director of Mines, there needs to be sensitization on the ASM policy before it can be sent to

¹¹³Bermúdez-Lugo, 2009

¹¹⁴Informal discussions between Villegas, Turay, and several government officials throughout the field research period.

¹¹⁵Personal communication between Villegas, Turay, and Sahar Tamba, District Mining Engineer for Kenema, on 28 January 2013.

¹¹⁶ Villegas and Turay observed artisanal zircon mining at tailings site in Koidu, Kono District, Sierra Leone in February 2013.

¹¹⁷ Personal communication between Villegas, Turay, and Sahar Tamba, District Mining Engineer for Kenema, on 28 January 2013.

¹¹⁸ Personal communication between Villegas, Turay, and Sahar Tamba, District Mining Engineer for Kenema, on 28 January 2013.

¹¹⁹ Researches welcome examples from the last five years where rehabilitation work has been performed using the revenues from the rehabilitation fees.

¹²⁰Informal discussions between Villegas, Turay, and several sources throughout the field research period.

¹²¹ See Garrett, Mitchell, and Levin 2008.

Parliament; in the meantime, unfortunately, despite the effort made to create it, it has no legal standing and there is no timeline for its submission to Parliament.¹²²

2.2.1.3 Monitoring & oversight

“These guys don’t even have bikes.”¹²³

In Sierra Leone, local Mines Monitoring Offices (MMOs) are responsible for implementing the government’s laws and regulations. Mines Monitoring Officers are typically political appointees who may or may not have a technical background. They are overseen by technical staff. The lead technical staff person in each district is the District Mining Engineer.

It is generally accepted by both those mining and the Mines Ministry itself that the capacity of the government to monitor artisanal sites is insufficient. At the time of research in Kenema District, Mines Monitoring Officers had not been paid in ten months. Moreover, there were no working motorbikes, which in practice means they must use their own vehicles—if they have them—for official business. The lack of transport is a long-term issue and has been a major impediment to successful regulation of the sector since 2002.¹²⁴ It is something that the Director of Mines in Freetown is aware of but attributes the issue to a lack of resources. The World Bank and DFID are currently funding policy development but there is an apparent lack of funding – from the Sierra Leone state or its donors—for policy implementation at the District and chiefdom level.

2.3 Mining in protected areas and critical ecosystems

The Government of Sierra Leone expressly forbids mining from taking place within a national park. In practice, however, regarding Sierra Leone’s protected areas, mining continues due to insufficient resources to monitor the networks of protected areas and due to coordination issues within the government.

2.3.1 Artisanal mining in protected areas

The recent civil war is thought to have exacerbated the issue of ASM taking place in protected areas around the country. In their 2012 report, Brown and Crawford write, “The Revolutionary United Front (RUF) rebel group established camps inside protected forests, notably in the northern section of the Gola rainforest and the Kangari Hills... Displaced populations conducted extensive farming, logging and artisanal mining operations in the country’s reserves (UNEP, 2010).”¹²⁵ During and right after the war, “The collapse of law and order led to widespread illegal artisanal mining, often in or near protected areas.... In the post-conflict phase, demobilized rebels often turned to the natural resources sector for income, such as to artisanal mining in protected areas (i.e., Kangari Hills, Kambui Hills, OKNP).”¹²⁶ Furthermore, “General lawlessness facilitated an increase in cross-border poaching between Sierra Leone and Guinea and Liberia”.¹²⁷ The withdrawal of active management in these areas likely exacerbated the issue of ASM in protected areas, as did the perhaps understandable prioritization of immediate humanitarian needs over forest estate management around the country.¹²⁸

ASM continues to be practiced in protected areas, though at a small scale, throughout the country. For example, ASM is known to take place in the rivers at the southern end of the Tingi Hills Non-hunting Forest Reserve.¹²⁹ In the Kangari Hills, a Non-hunting Forest Reserve, artisanal gold miners have established settlements within it.¹³⁰ Please see Annex D for the results of the 2011 ASM-PACE scoping study for Sierra Leone by Villegas and Turay. The study took a particular focus on ASM occurring in Outamba Kilimi National Park (OKNP), the Gola Forest, and Lake Sonfon. It is the responsibility of the GRNP forest guards to patrol the protected area for illicit mining. The Mines Ministry only has authority for legal mining.¹³¹

Particularly in the protected forested sections in the south and east, ASM of diamonds and gold have negative effects on water quality, forest cover, and wildlife as there is increased demand for bushmeat from artisanal

¹²²Personal communication between Villegas, Turay, Tubbs, and Director Sharkah on 22 Jan 2013 in Freetown.

¹²³Personal communication between Villegas, Turay, Tubbs, and Director Sharkah on 22 Jan 2013 in Freetown.

¹²⁴ USAID DIPAM report identifies this as a key issue.

¹²⁵ In Brown & Crawford, 2012, p. 10.

¹²⁶ In Brown & Crawford, 2012, p. 10.

¹²⁷ In Brown & Crawford, 2012, p. 10.

¹²⁸ Squire, 2001 in Brown & Crawford, 2012, p. 10.

¹²⁹ Arnold D. Okoni-Williams

¹³⁰ Arnold D. Okoni-Williams

¹³¹ Personal communication between Villegas, Turay, and MMO staff in the course of field research.

miners.¹³² The USDA Forest Service notes that while the “majority” of artisanal mining has “individually insignificant effects on biodiversity and tropical forests”, cumulatively the effects are significant, particularly if there is a rush that follows a valuable discovery and the status quo of a lack of “any effective reclamation programs for mined areas.”¹³³ They continue: “Artisanal, alluvial diamond mining activity has led to considerable habitat loss and increased erosion and has directly impacted in excess of 120,000 ha in the eastern and southern regions... The current artisanal mining practices will likely lead to continued environmental impacts, unless improved methods and management activities are introduced.”¹³⁴ Within the Gola Forest, the major cause of deforestation is agricultural incursion, with mining playing a minor role.¹³⁵

2.3.2 Industrial mining in protected areas

Within the industrial sector, there are on-going issues regarding overlapping of industrial concession rights with the country’s protected areas.

In the GRNP itself, two exploration licences were granted in 2005 and 2007 to SL Minerals for iron ore and to Target Resources—then to its subsidiary Mile Stone Resources – for diamonds, respectively.¹³⁶ A third exploration license was apparently granted in 2006 to Sierra Diamonds, now Stellar Diamonds, although the Director of Forestry apparently successfully blocked the license.¹³⁷ In addition, the Bagla Hills section of the Park is known to have very large iron ore deposits; the area was explored in the 1970s and the deposits were confirmed. In 2005, despite its protected status, the Mines Ministry granted an exclusive prospecting licence (EPL) for iron ore in the Bagla Hills to SL Minerals and then transferred to CIC Mining Resources Limited.¹³⁸ The mining license was valid until at least 2010.¹³⁹ As of 2012, industrial mining company Mile Stone Resources owned a concession that directly overlapped with a sizable portion of the GRNP. See Figure 5. When asked by ASM-PACE researchers about the Mile Stone concession, MMR Director Jonathan Sharkah stated that the issue has been resolved, that there are no more industrial mining concession overlaps with the GRNP, and that “Gola is protected”.¹⁴⁰ He went on to state that all industrial mining concessions overlapping the Park have been allowed to expire.¹⁴¹ Donor pressure, vigilance by GRNP management, and intervention by Sierra Leone’s President Koroma are likely the reasons GRNP has been spared. Other protected areas are not so fortunate. For example:

- In the Kambui Hills, up to 2/3 of the reserve forest continues to overlap with the exploration concession of Lion Mountain Mining Company.
- In the Kangari Hills, UK-based Cluff Gold continues to hold an industrial mining license and there are several active exploration licenses within the protected area.¹⁴²

The persistence of the issue over time and to the current day signals a lack of operational coordination and communication between the MMR and MAFFS. According to officials within the MAFFS, the Office of the President has sent a very clear message to MMR regarding the importance of actually protecting protected areas in practice and MAFFS officials said they are working to identify and rectify the overlap issues.¹⁴³ In 2013, a new National Protected Area Authority will become operational and will have responsibility to manage the country’s protected area network. The Authority will be a part of MAFFS and will eventually have prosecutors assigned to it in order to enforce the country’s forestry laws. MAFFS officials indicated their Ministry faces a number of challenges, including financial capacity and getting conservation the priority it deserves in the national agenda.¹⁴⁴

¹³²USDA Forest Service International Programs, 2007

¹³³USDA Forest Service International Programs, 2007

¹³⁴USDA Forest Service International Programs, 2007

¹³⁵ Personal communication between Villegas and Tubbs in March 2013.

¹³⁶ Global Witness, 2010

¹³⁷ Global Witness, 2010

¹³⁸ There are allegations that community members in the diaspora, together with the paramount chief, had reportedly gone into a clandestine arrangement with some mining companies to mine the Bagla Hills. The Bagla Hills issue remains highly controversial, with many local authorities and communities wanting Bagla Hills to be mined for economic gain. Personal communication between Babar Turay and Baintu Keifala, September 2011.

¹³⁹ Global Witness, 2010

¹⁴⁰ Personal communication between Villegas, Turay, Tubbs and Mines Director Sharka on 22 January 2013.

¹⁴¹ Personal communication between Villegas, Turay, Tubbs and Mines Director Sharka on 22 January 2013.

¹⁴² Personal communication between Villegas, Turay, Assistant Director of Forestry at MAFFS Kate Garnett, and Superintendent of Wildlife at MAFFS Mohamed Mansaray on 06 February 2013.

¹⁴³ Personal communication between Villegas, Turay, Assistant Director of Forestry at MAFFS Kate Garnett, and Superintendent of Wildlife at MAFFS Mohamed Mansaray on 06 February 2013.

¹⁴⁴ Personal communication between Villegas, Turay, Assistant Director of Forestry at MAFFS Kate Garnett, and Superintendent of Wildlife at MAFFS Mohamed Mansaray on 06 February 2013.

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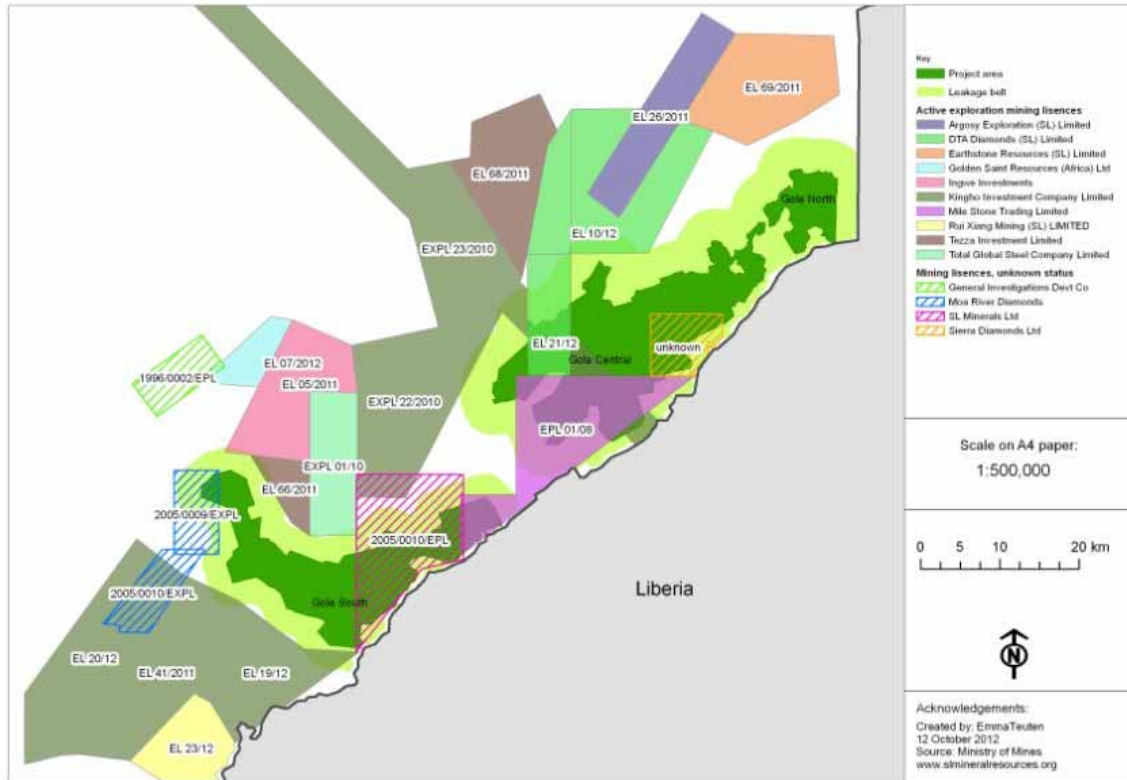


Figure 5: The map above shows the overlapping industrial mining concessions with the GRNP. According to Mines Director Sharkah, all overlapping concessions have been allowed to expire.

3. ARTISANAL MINING IN AND AROUND THE GOLA RAINFOREST NATIONAL PARK

3.1 Profile of Gola Rainforest National Park

The Gola Rainforest National Park protects some of the last remaining parts of the Upper Guinea forests, a large expanse of rainforest that once covered coastal West Africa. Now fragmented due to logging and agricultural conversion, it is thought that up to 70 per cent of the original Upper Guinea forest is lost.¹⁴⁵ The Gola Forest, in which the GRNP lies, is one of these remaining fragments and is considered a 'biodiversity hotspot' because of its tremendous diversity of plants and animals.¹⁴⁶ It houses over 330 species of birds, of which 18 are threatened, 47 species of large mammals, of which ten are primates, more than 500 species of butterflies, and almost 1,000 plant species, of which 770 of these are flowering plants.¹⁴⁷ It is home to forest elephants and endangered pygmy hippos, western chimpanzees, Diana monkeys, and the Western Red Colobus Monkey, among others.¹⁴⁸ Accordingly, many conservation institutions have highlighted its importance. It is one of WWF's Global 200 priority Eco-regions, a Conservation International "25 Global Biodiversity Hotspots", a BirdLife International "Important Bird Area" and has been recognized as an Important Chimpanzee Area.¹⁴⁹

The now-GRNP was first made into a protected forest reserve in 1926 and was expanded in 1956 and 1963.¹⁵⁰ The reserve was formerly designated for commercial logging¹⁵¹ as a 'Production Forest Reserve' but was gazetted as a national park in 2010 and ceremonially opened in 2011. It protects 71,000 hectares, is Sierra Leone's second national park, and is its first rainforest national park.¹⁵² GRNP operates in three districts—Kailahun, Kenema and Pujehun – and within seven chiefdoms: the Malema Chiefdom in Kailahun, the Guara, Tunkia, Nomo and Koya chiefdoms in Kenema, and the Makpele and Barri chiefdoms in Pujehun. The Park-adjacent population includes approximately 100,000 people.¹⁵³

3.2 Overview of the Gola Rainforest National Park Programme

3.2.1 Management Structure & Engagement Model

The GRNP Programme management is comprised of three partner organisations: the Government of Sierra Leone (represented by the Forestry Division of MAFFS), the Conservation Society of Sierra Leone (CSSL) and the Royal Society for the Protection of Birds (RSPB). Sierra Leone's Forestry Division is the lead forest management agency and the RSPB and CSSL provide technical support to it with a particular focus on the GRNP.¹⁵⁴ The GRNP Programme in various forms has been operational in a formal capacity since 2002, though the partners first began working together in the 1990s.¹⁵⁵ The Gola Forest Programme (GFP)—since renamed as the Gola Rainforest National Park Programme— has received funding from the European Union, *Fond Français Pour l'Environnement Mondial*, the UK Defra Darwin Initiative, Conservation International's Global Conservation Fund the Critical Ecosystem Partnership Fund, and the Royal Society for the Protection of Birds.¹⁵⁶

Since 2007, the GFP/GRNP has been implementing a Benefit Sharing Agreement with local communities. This includes paying compensation to land owning families and Paramount Chiefs, providing scholarships for school children and providing a Community Development Fund (CDF) for livelihood improvement projects for each of the seven chiefdoms comprising the GRNP area. The Programme also operates a Forest Management Committee

¹⁴⁵ RSPB, CSSL, GoSL (n.d.)

¹⁴⁶ RSPB, CSSL, GoSL (n.d.)

¹⁴⁷ Gola Rainforest National Park, 2013a.

¹⁴⁸ Gola Rainforest National Park, 2013b.

¹⁴⁹ RSPB, CSSL, GoSL (n.d.)

¹⁵⁰ Crawford, Brown & Finlay, 2011.

¹⁵¹ RSPB, CSSL, GoSL (n.d.)

¹⁵² RSPB, CSSL, GoSL (n.d.)

¹⁵³ RSPB, CSSL, GoSL (n.d.)

¹⁵⁴ RSPB, CSSL, GoSL (n.d.)

¹⁵⁵ Gola Rainforest National Park, 2013c. Personal communication with RSPB's Nicolas Tubbs in March 2013.

¹⁵⁶ RSPB (2013); and Crawford, Brown & Finlay, 2011.

in each chiefdom that comprises ten people, of which seven are elected and three are appointed.¹⁵⁷ Further details of the Benefit Sharing Agreement of 2007 -2012 can be found in the GRNP Management Plan (2007-2012). From 2013 onwards, the structure, scale and implementation of livelihood activities will be entering a new phase, based on the development of the GRNP's REDD project, reflected in the new management plan (2013-2018) and benefit sharing agreement.

The Park has in place a memorandum of understanding (MOU) with the Sierra Leonean police force for the use of: i) a Rapid Deployment Force to address major incidents involving illegal activities, and ii) four armed police officers to patrol with the forest guards to enhance their safety in areas where illegal activities are prevalent (GRNP forest guards are not armed). Forest guards and GRNP staff have undergone human rights training by the Sierra Leone Human Rights Commission.

Compared to other national parks around the world, the GRNP's approach to protection has the following notable features:

- **Active park management.** Through donor grants the GRNP has been able to actively manage the Park and significant resources have been invested to establish boundary demarcation and recognition, and provide robust security in the form of fifty full-time forest guards and relationships with local security apparatuses. Sustainable donor funding is impossible to secure and the GRNP was established on the basis that it would be funded by REDD, to assure its long –term financing for the next 30 years and avoid it becoming a 'paper park'.¹⁵⁸
- **Presidential-level support** for the protection of the park, which helps build internal will for police and other security to dedicate resources for park-boundary protection.
- **Intensive community engagement** by the GRNP using a full-time community development team that engages with their assigned chiefdom communities. The community development officers are from the chiefdoms with which they liaise.
- **Human rights training** of forest guards provided in 2012 by the Sierra Leone Human Rights Commission and clear rules of engagement have been further developed.
- **Partnerships with the police and the Rapid Deployment Force**, a specialized police security unit. The police have trained the forest guards on proper procedures to follow during civil arrests.
- **Active advocacy** to prevent the allocation of industrial mining concessions in GRNP. See section 2.3 for more information.
- **Coordination of exposure visits** of community members to mining-affected areas of Sierra Leone – such as Kono—to better communicate the environmental impacts of mining.
- **Trans-boundary cooperation.** The RSPB, GRNP, CSSL and the Forestry Division of MAFFS are all partners to the ongoing EU-funded project 'Across the River Trans-boundary Peace Park Project' (ARTP) currently working with counterparts in Liberia, including the Liberian Government to upgrade the status of the Liberian side of the Gola Forest. Liberia's Lofa and Foya forest reserves are undergoing upgrade plans to make it Liberia's second national park.¹⁵⁹ Once the upgrade is completed, the GRNP, the Lofa and Foya reserves will form a trans-boundary 'peace park' covering approximately 300,000 square hectares.¹⁶⁰

3.3 Historic ASM inside and around GRNP

While over 90% of the people in the region are subsistence agriculturalists,¹⁶¹ artisanal mining has been an important part of life in the Gola Forest region for the last several decades.¹⁶² Before the civil war of the 1990s,

¹⁵⁷ Personal communication between Babar Turay and Mr Alusine Fofana, director of the Gola Forest Programme, September 2011.

¹⁵⁸ Paper parks are places with legal protection but no active management; unfortunately, this characterizes a significant number of the parks around the world today.

¹⁵⁹ Personal communication between Cristina Villegas, Dr Rob Small, and Theo Freeman of Liberia's Forest Development Authority. July 2011.

¹⁶⁰ Brown & Crawford, 2012.

¹⁶¹ Personal communication between Villegas and Tubbs in April 2013.

¹⁶² According to community meetings and interviews held in Malema chiefdom in January 2013. ASM activity within the Gola Forest protected area boundaries is also documented in Richards (1996).

members of local communities—including men *and* women—were actively mining within some parts of the reserve.¹⁶³ Until the early 2000s, sawing, mining, hunting, and farming were all taking place within the boundary.¹⁶⁴ While there is no official consensus when ASM began in the area surrounding the GRNP, there seems to be agreement that it has been occurring in the area for at *least* 20 years, possibly up to 40 years. A village elder estimates mining has been occurring in the Gola Forest region since 1988-1989 (about 20 years ago),¹⁶⁵ while a town chief estimates it has been going on for decades before that.¹⁶⁶ One digger whom researchers interviewed (see section 3.4) reported he has been mining in the Kenema and Malema areas for 40 years. ASM has been occurring in Sierra Leone for the last 60 years.

Mami Queen Madam Baidn Jimmy, who – per traditional governance structures—is the leader of women in the Malema chiefdom—said that women were very active in gold and diamond mining in the Gola Forest region, including the reserve, before the war. Women traditionally mined at Ngolahun,¹⁶⁷ Bagpan, Pagbanbima, Gbamboo, and the Lower Sami locations within the Malema chiefdom.¹⁶⁸ Lower Sami is also apparently an important area for diamonds for the Dambala, Bandajuma, and Meycagema communities.¹⁶⁹ These areas were apparently ideal for women miners because they were more shallow, making the gold and diamond-bearing gravels easier to access by female diggers and panners.¹⁷⁰ These areas are now part of the GRNP and – along with all other mining sites within the park—after the war, women’s traditional mining sites were emptied. Mami Queen Jimmy estimates 60 per cent of women in the area had been involved in gold mining at its height; village markets were full, and women controlled large sums of money, though the precise amounts were unknown because incomes were shrouded in secrecy. In a context of limited mining lands and a patriarchal society, Mami Queen Jimmy says that men now dominate the mining pits and its benefits. She notes that with the loss of these traditional areas, women’s economic opportunities have never recovered.¹⁷¹

For both men and women, the site of Ngolahun appears particularly important. Ngolahun is the name of an ASM camp that was once located in the forest but was moved with the establishment of active park management. Diamond mining apparently began there in the 1960s or early 1970s.¹⁷² Locally, it is believed to still hold significant quantities of golden-coloured diamonds (different to yellow diamonds); Ngolahun-sourced diamonds are supposedly known and prized by traders in the region.¹⁷³ Robust park enforcement has meant that the Ngolahun site in the park is empty; for planning purposes, park officials should know of its significance or, at least, the rumours of its existence. To the authors’ knowledge, there is no map of the historic ASM camps in the Gola Forest reserve or those that were set up during the war.¹⁷⁴

Starting after the war, the Gola Forest Reserve began to be actively managed. In 2004, the boundary was re-demarcated and agreed conservation measures were enforced with forest guard patrols.¹⁷⁵ Community sensitization was performed in the area but miners were not explicitly targeted; it was aimed at all members of surrounding communities.¹⁷⁶ A Benefit Sharing Agreement (BSA) was developed, under which compensation and development payments to the community were agreed by Paramount Chiefs. Until 2011, forest guard enforcement appeared to be enough deterrence to keep most artisanal mining out of the park. However, in November 2011, the park experienced a sudden increase in illegal mining in the Nomo section of the national park and occasional incursions continue to persist.

¹⁶³ According to community meetings and interviews held in Malema chiefdom in January 2013.

¹⁶⁴ Personal communication between Villegas, Turay, and Park Operations Manager Tamba Vandí on 25 January 2013.

¹⁶⁵ Personal communication between Babar Turay and a town elder, September 2011.

¹⁶⁶ Personal communication between Villegas, Turay, Sarmu, and a town chief on 27 January 2013.

¹⁶⁷ Literally translated, Ngolahun means “in the forest”.

¹⁶⁸ Women in this area now make extra money by petty trade or selling produce from backyard gardens; this is a stark contrast to the time where markets were full and women made significant and visible profits from mining. Personal communication between Villegas, Turay, Sarmu and Malema’s Mami Queen, on 27 January 2013.

¹⁶⁹ Multi-village workshop in Jopowahun on 30 January 2013.

¹⁷⁰ For more information on the geological conditions of where women tend to mine, see Katherine C. Malpeli and Peter G. Chirico’s “*The influence of site geomorphology on the role of women at artisanal diamond and gold mining sites: integrating physical science data into the ASM discourse*” (Forthcoming, 2013).

¹⁷¹ Women in this area now make extra money by petty trade or selling produce from backyard gardens; this is a stark contrast to the time where markets were full and women made significant and visible profits from mining. Personal communication between Villegas, Turay, Sarmu and Malema’s Mami Queen, on 27 January 2013.

¹⁷² Personal communication between Villegas, Turay, Sarmu, and PC PC Joseph Lamin Ngevaio of Malema on 26 January 2013.

¹⁷³ This was not confirmed by researchers during the course of research due to concerns it could reawaken interest in the stone.

¹⁷⁴ The authors welcome such data. Please contact cristina@estellelevin.com.

¹⁷⁵ Personal communication between Villegas, Turay, and Park Operations Superintendent Tamba Vandí on 25 January 2013.

¹⁷⁶ Personal communication between Villegas, Turay, and Park Operations Superintendent Tamba Vandí on 25 January 2013.

3.4 Profile of contemporary ASM activities in and around the Gola Rainforest National Park

“The government cannot support everyone. Mining is a form of self-employment... Conservation only employs a few people; mining provides employment for thousands”¹⁷⁷

During the course of research, two main types of artisanal mining were identified as occurring within or around the Sierra Leonean side of the Park: seasonal community-based artisanal mining and artisanal rush mining. Community-based seasonal mining appears to be occurring on the edge of the park with incursions inside of it, while rush mining events occur inside and outside of the park. A view into ASM on the Liberia side of the Gola Forest is beyond the scope of this research. That said, however, according to GRNP staff and local police, miners on the Liberia side of the forest can be found throughout the forest. Moreover, unlike Sierra Leone, guns are widely available in Liberia and miners on the Liberia side are apparently often armed.

The following sections profile rush mining and community-based mining, respectively.



Figure 6: One of many diamond buyers in Kenema, the largest town in the southeast and the closest town to the Gola Rainforest National Park boundary.

Among the Sierra Leoneans arrested were two current and ex-military members. One is retired and was discovered working as a miner and the other was on active duty in the Sierra Leone army and was hired security for some of the miners.¹⁸⁰ The active army officer has since been dismissed.¹⁸¹

The research team was not allowed into the affected Nomo area of the park due to on-going safety concerns. Indeed, there was an incident of forest guards being ambushed in February 2013, but fortunately no injuries reported.¹⁸² Based on descriptions by GRNP staff and their visual estimation, the affected site stretches approximately 5km² of cratered—but not deforested—landscape.¹⁸³ According to GRNP staff, miners are not using advanced equipment; only shovels and picks have been found on the sites. Based on the statements of arrested miners, they were mining for gold and yellow diamonds.¹⁸⁴ The research team reviewed video footage of one of the arrests and the mining pits in the rush sites appear to be approximately one metre deep.¹⁸⁵ This is consistent with the Kenema District Mining Engineer, who commented in a separate interview that the overburden was quite shallow—approximately one metre—compared with three metres or more at other sites in the region. The shallowness of the overburden in the

3.4.1 Rush Mining within the GRNP

Nomo Rush Site

In November 2011, the Gola Rainforest National Park began to detect incursions of groups of artisanal miners within the boundaries of the Park along the Gola Central portion of the park in its southern edge that overlaps with the Nomo chiefdom. There are several hundred diggers estimated to be involved, from ages 12 to 80 years old. Both men and women were working on the Nomo site.¹⁷⁸ Upon detection, forest guards alongside local police were dispatched to the area. Seventy-eight people of Sierra Leonean, Liberian, and Malian descent were arrested in a round of arrests in November 2011.¹⁷⁹

¹⁷⁷ Personal communication between Villegas, Turay, Sarmu, and the Paramount Chief of Kenema on 25 Jan 2013.

¹⁷⁸ Based on communications between Villegas, Turay, GRNP staff, and local police in the course of research.

¹⁷⁹ Personal communication between Villegas, Turay, and Park Operations Superintendent Tamba Vandí on 25 January 2013.

¹⁸⁰ Personal communication between Villegas, Turay, and Park Operations Superintendent Tamba Vandí on 25 January 2013.

¹⁸¹ Personal communication between Villegas, Turay, and Park Operations Superintendent Tamba Vandí on 25 January 2013.

¹⁸² Personal communication between Villegas and Richard Lloyd of GRNP on 05 February 2013 in Freetown.

¹⁸³ Personal communication between Villegas, Turay, and Park Operations Superintendent Tamba Vandí on 25 January 2013.

¹⁸⁴ Personal communication between Villegas and Tubbs in August 2012.

¹⁸⁵ Video provided by the GRNP and was viewed by Villegas and Turay on 25 January 2013.

rush area of the Park is extremely important to note. It is unusually shallow in this day and age in Sierra Leone, when in other historically important diamond mining areas much more overburden must be removed, making the upfront investment necessary to mine in these other areas much higher and the financial risk also higher. In Kono, for example, there is typically more than five metres of overburden to remove before reaching diamond-bearing gravel. Shallow deposits means higher profit potential, less risk, and potentially easier rehabilitation.¹⁸⁷

The arrest video also revealed that local community members are involved as diggers. According to the information provided by community members in the video, they were paid 50,000 Leones (approximately US\$12) for a 'gang' (a group) of diggers per day. Based on the norms of mining in the area, the gang was likely 5-6 people, meaning that individual diggers were making approximately US\$2 per day for their physical labour. If there were more people per gang, then the daily wage will have been even less. It is unclear if the diggers would have shared a portion of the winnings. Researchers were able to acquire a small sample list of those arrested for illicit mining in the GRNP. It reveals that about half the diggers who were arrested are locals (from the Kenema District) and the remaining are almost all from northern Sierra Leone (Bombali and Tonkolili Districts).

Miners are thought to have discovered the Nomo site by identifying a gold vein on the Liberia side of the border near the Liberian towns of Kawalahun and Kongo. From there, Sierra Leonean miners who had crossed to the Liberia side for employment are thought to have traced the vein to the Nomo site.¹⁸⁸ Liberians are known to come into the GRNP to mine and return to Liberia when they are finished.¹⁸⁹

GRNP's response to the rush has been to arrest miners in conjunction with the police. Court proceedings take place at the Kenema District courthouse. Charges include illegal mining and illegal entry into the Park.¹⁹⁰ Most diggers who were convicted received sentences of six months or a fine of Le750,000 (about US\$180). Several miners who were arrested were able to post bail extremely quickly and despite the large sum of cash required, leading one interviewee to speculate that important buyers or persons may be linked to the mining. Presidential pardons were given to approximately 100 arrested miners. The GRNP is planning on engaging local youth from the Nomo chiefdom to work on the rehabilitation of the mining site to cover the craters left by the miners as part of an outreach strategy.¹⁹¹

Okala, a convicted miner from the 2011 Gold Rush

Okala Koroma was convicted in 2012 for illegally mining in the Gola Rainforest National Park. Before becoming a miner, he was a farmer in Port Loko in the north of Sierra Leone. He says that he migrated to Kongo Town in Tunkia chiefdom in Sierra Leone to find a livelihood as a miner. Upon arriving, he says he met a group of local men from the nearby village of Boama, in the Nomo chiefdom. The men – who were also prospective miners—said that they had tried mining in Tunkia but it was not profitable, so they convinced him to go with them to Nomo instead. They quickly formed a mining group (a “gang”) of eight people comprised of five locals from Nomo and three Sierra Leoneans from other parts of the country. He says that they were arrested on their first day, when they were clearing brush from their intended mining site. He says he did not know that he was in the GRNP because he was unfamiliar with the area and was relying on the knowledge of locals. He was arrested, tried and convicted, and sentenced to six months in jail for illegal mining in the GRNP and an additional three years for “malicious destruction” of Park equipment. Sierra Leone’s prisons are notoriously poor. He is 35 years old and has a wife, one child of five years, and one baby of eight months. Two other convicted miners are being held at a prison in Freetown.

Interviewed by Villegas and Turay on 28 January 2013 at Kenema District Prison, Sierra Leone.¹⁸⁶

¹⁸⁶ The interview was initially to be anonymous to give him the opportunity for candour, but the prisoner wanted researchers to know his name. For this reason, authors have chosen not to anonymize it at publication. The interview was observed by several prison guards and a researcher from Amnesty International's Sierra Leone office who was coincidentally visiting the prison on that day.

¹⁸⁷ Post-trip comments by Levin, 2013.

¹⁸⁸ Personal communication between Villegas, Turay, Tamba Vand, and Fomba Kanneh on 25 January 2013; Personal communication between Villegas, Turay, and G.S. Kamara, Divisional Head of Operations of Kenema District Police, on 28 January 2013.

¹⁸⁹ Personal communication between Villegas, Turay, and G.S. Kamara, Divisional Head of Operations of Kenema District Police, on 28 January 2013 and with Sahar Tamba, District Mining Engineer for Kenema, on 28 January 2013.

¹⁹⁰ Personal communication between Villegas and Tubbs in August and December 2012, and January 2013. Personal communication between Villegas, Turay, Tubbs, and Richard Lloyd on 24 January 2013.

¹⁹¹ Personal communication between Villegas, Turay, and Tamba Vand on 25 January 2013 and with Richard Lloyd on 24 January 2013.

Based on a variety of interviews with park authorities, police, and a jailed miner, there does not appear to be a single leader of the rush mining. As indicated above, adjacent communities appear to be active parts of these mining groups. Mining appears to take the form of “gado gangs”, which is a type of self-organisation in Sierra Leone that involves loose groups of people that do not typically have licenses.¹⁹² Gado gangs or other groups mining diamonds might also be active in other parts or sections of the Park; this has been documented by other researchers but did not form part of the 2013 field study by ASM-PACE.¹⁹³

Recommendations for next steps in this situation are outlined in this report’s section 4.

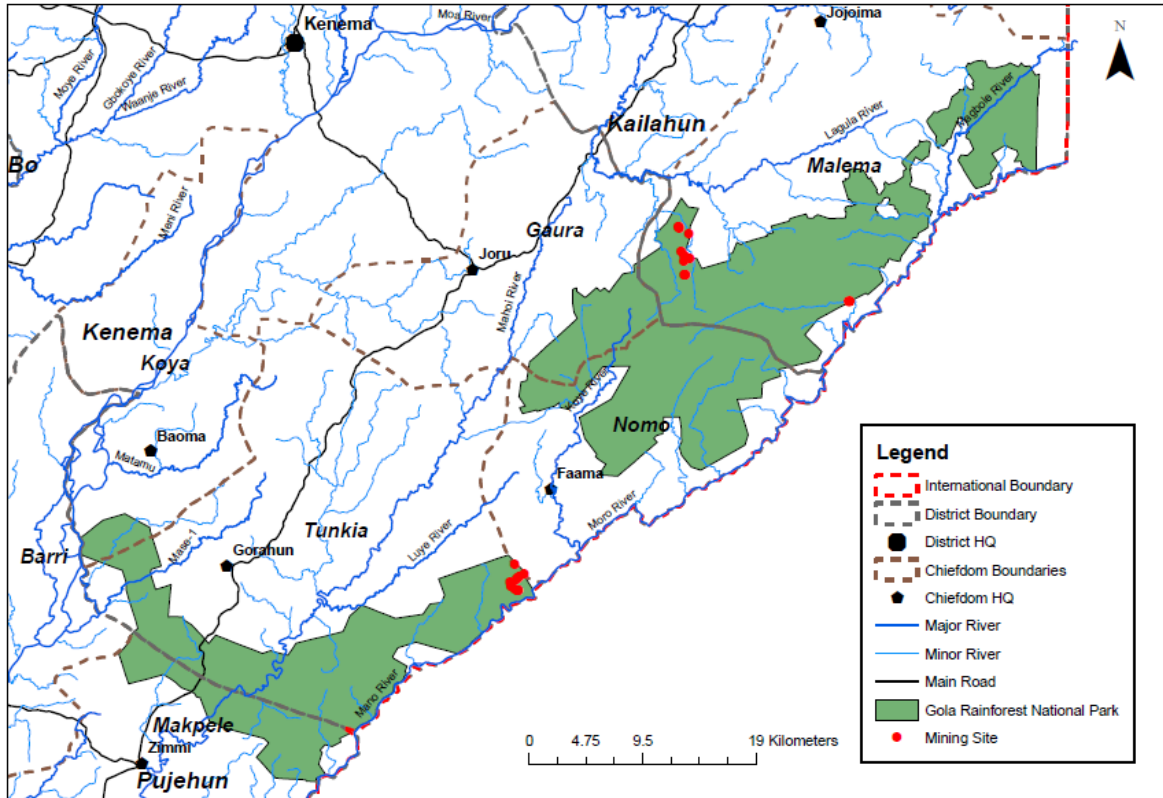


Figure 7: Pictured are the documented illegal mining sites within the GRNP. The sites toward the red sites toward the top of the map are in dispute with the mining village of Patama, which claim the GRNP boundary is incorrect. A resolution process is underway. The Nomo rush sites are not pictured on this map but is taking place in the southern section of Gola Central. There are also illegal mining sites in the Tunkia area of the Park. *Map courtesy of GRNP (created February 2013 for ASM-PACE).*

¹⁹² According to Turay and Sarmu. Gado gangs are also discussed in Levin 2005.

¹⁹³ According to research in 2009 by Professor Danny Hoffman of the University of Washington, there are groups of young men that roam the Park and its vicinity. Many of these men are ex-combatants who are now mining together, having fought in the same units during the war. In other situations, they are from the same village. They are typically in their early thirties, although some members are teenagers. Most are Mende from Sierra Leone’s southeast. They mine because there are few other options available to them in the region and, in that context, they are willing to live in the forest for their livelihood. Some have farming skills, others may have trade skills acquired through the Disarmament, Demobilization, Reintegration (DDR) programme in Sierra Leone following the war, while many others have no other skills because they were recruited as fighters when they were quite young. They choose to mine in the Gola region because apparently it is common knowledge amongst youth that the Kono region is ‘mined out’ of artisanal diamonds. In addition, local control of land is perceived to be looser in the Gola region and there is a perception that the forest is rich in minerals and is generally untapped. They have financiers and sell to nyeko-nyeko, due their proximity and relationships to the groups. They mine both diamonds and gold. Source: Personal communication between Hoffman and Villegas on 20 January 2013.

3.4.2 Community-based artisanal mining occurring inside and outside the national park

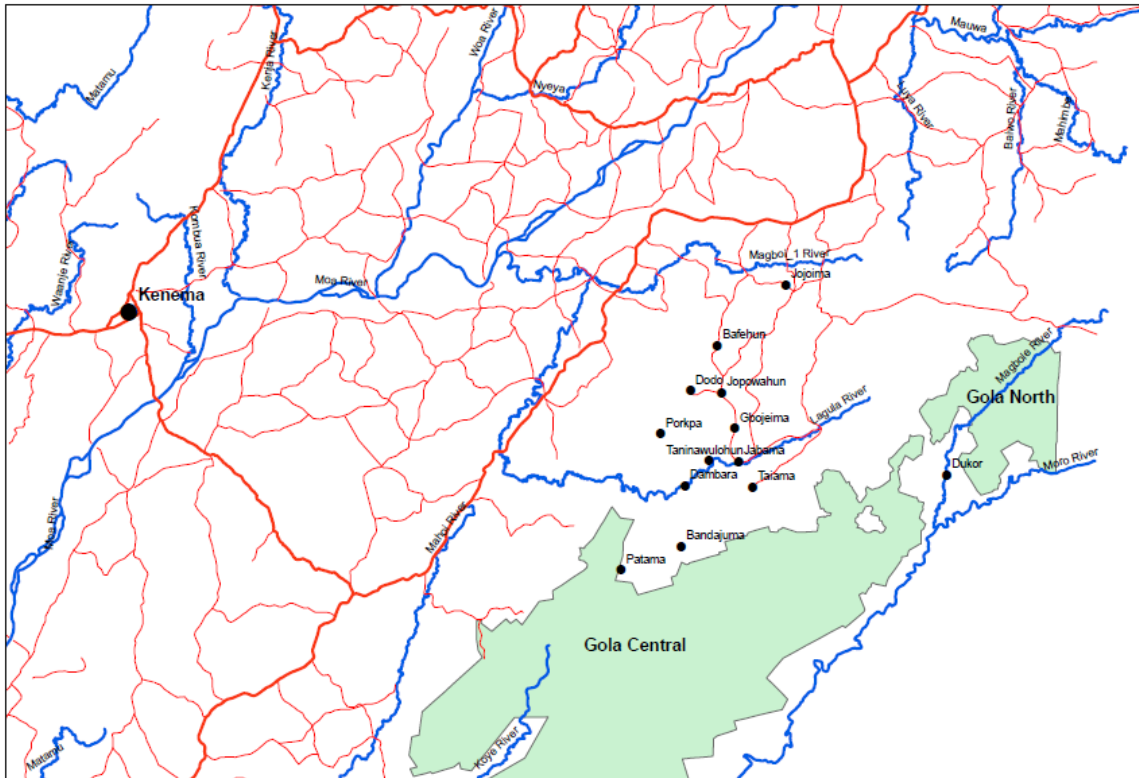


Figure 8: Pictured are the mining villages with which researchers interacted. There are many other towns in this region, however only those studied are shown above. The Mano River forms the international boundary between Sierra Leone and Liberia. *Map courtesy of GRNP (created January 2013)*

The second type of ASM occurring in the region is community-based mining. Researchers focused on the community-based artisanal mining occurring in the Malema chiefdom, where mining is thought to be a several-decades-old seasonal profession undertaken by some communities as an important complementary income to farming. Researchers focused on the mining communities of Bafahun, Bandajuma, Dodo, Dukor, Dambara, Jojoima, Jopowahun, Patama, Talama, and Taninawulohun villages.¹⁹⁴ See the area map in figure 8. While these towns are all in the vicinity of GRNP, only Bandajuma and Patama are officially designated as “forest edge communities”, and, indeed, in addition to being located immediately outside the Park boundary, their mining activities are considered to be directly impacting the Park.

Specifically:

- The mining near the village of Bandajuma is thought to be taking place on or inside the park border.
- At the time of this writing, there is a boundary dispute with community members in Patama. Community members argue the gold sites are on their community lands, while the Park believes it is occurring within the Park boundary.¹⁹⁵ Groups of people were mining in this disputed area between September and December 2012.¹⁹⁶ As of January 2013, the issue was due to be resolved as GRNP and community representatives had plans to meet and negotiate on a solution.¹⁹⁷

¹⁹⁴ There have been socio-economic surveys completed in the area; however data was not available at the time of publication. In future work, authors will seek to contextualise their findings with data from these surveys.

¹⁹⁵ Villegas personal communication with Richard Lloyd on 31 January 2013. Also

¹⁹⁶ Participant responses in a workshop of mining area communities on 30 January 2013. Precise numbers are unknown.

¹⁹⁷ Villegas personal communication with Richard Lloyd on 31 January 2013. Also from personal communication between Villegas, Turay, and Tamba Vandi on 25 January 2013.



Figure 9: Motorcycle carrying mining supplies

Researchers did not visit these sites to validate these claims because the precise boundary line is an issue between the villages and the GRNP. That mining is occurring along the boundary of the Park does not appear to be in dispute.

Because access was not possible in the Nomo-area rush sites due to security issues, researchers visited the community-based mining areas in the Malema chiefdom. This is described below.

3.4.2.1 Artisanal mining within the Malema chiefdom

“Mining will never stop. It was here before me and it will be here after me. If it were stopped, that would lead to conflict.”¹⁹⁸

“Mining is the only thing youths can use for employment.”¹⁹⁹

“Mining is our only way out.”²⁰⁰

“Mining will be here for 500 years. It will not be exhausted before then.”²⁰¹

Researchers held two meetings in the centrally-located village of Jopowahun during the course of field research. The first was informal and focused on the role of mining within that village specifically. The second meeting—organized with the help of the community and held a few days later—hosted representatives of area mining communities (as shown in figure 8). In addition to speaking with members of area communities, the research team visited an artisanal diamond site located on the Loi Stream, approximately four miles from Jopowahun village, four hundred meters from Dodo village and accessible from Jopowahun by foot only. The site is referred to locally as ‘acre’, in reference to the acre (210 feet by 210 feet) allowed by the artisanal diamond mining license. Jopowahun is approximately 10 km from the GRNP edge and the acre site is approximately 8 km from the Park boundary.

Based on conversations with the communities and direct observation, artisanal mining in the Malema chiefdom takes two main forms:

- Terrace mining, which is mining that occurs away from rivers and streams. Water must be transported to these areas. For this reason, terrace mining is usually done during the rainy season. (August–October)
- Swamp mining, which is mining that occurs in lowland areas and on the banks of rivers and streams. In the rainy season, water levels make it either impossible to mine or very expensive, owing to the water pump that must be used to pump out excess water. Swamp mining is usually done in the dry season (January–August) or when the water levels become more manageable.

For terrace mining, diggers describe the process as follows:

¹⁹⁸ Personal communication between Villegas, Turay, Sarmu, and PC Joseph Lamin Ngevao the Paramount Chief of Malema on 26 Jan 2013.

¹⁹⁹ Community meeting in Jopowahun village on 26 January 2013.

²⁰⁰ Community meeting in Jopowahun village on 26 January 2013.

²⁰¹ Translated from Mende. Comments of a male community member in Malema during a January 2013 community meeting on mining.



Swamp mining is the same process as described above, except a water-pump is used to evacuate the water from the pits so as not to disrupt the digging process. During the peak mining season of February through March, the village of Japowahun swells from 1,000 people to an estimated 1,800.²⁰²

The landowner on the Loi Stream/ 'acre' site told researchers that it was formerly a cocoa plantation. It was turned into a diamond mining area when the landowner discovered diamonds beneath. Diggers who now work the site are fed two meals per day by the financier, who also provides the gang's tools. The mining process is summarized in pictures in Figure 10 below. Researchers visited the site in late January, prior to the peak mining season. As a result, there were only three gangs of five diggers each actively working on the site. As described below, each gang brushes the area, then digs the pit, then treats the gravel. This process is staged based on the arrival of the diggers and so that the gangs are doing the "treatment" of gravel at different times; this ensures the landowner and financier's agents can observe the treatment process carefully. The other parts of the process do not have to be monitored as carefully. The biggest risk of diamond theft by diggers is during the treatment process.

²⁰² From interviews during the 27 January 2013 site visit.

Figure 10: The artisanal diamond digging process at the 'acre' site in Malema Chiefdom

Brushing: The area is first cleared of trees in a process called “brushing”.

Digging: Then diggers dig through four layers of Earth; first the top soil, then sand, then another layer of sand, then a soft material referred to as “five”, and then “gravel”. Diggers estimate most pits are three-shovels deep, or about 3-4 metres. This is the most environmentally destructive phase of artisanal mining. There is also no guarantee that the pit they dig will have diamonds or gold; it is part of the gambling process involved in artisanal mining.



Washing: After digging through several layers of earth, diamond-bearing gravel is reached. It is piled to the side to be “treated” at the end. To “treat” the gravel, the digger on the right shovels it into the top box. The large rocks remain in the upper box, while smaller stones fall through holes purposely drilled in the upper box. Then the contents of the second box are panned, using sieves to find the diamonds.

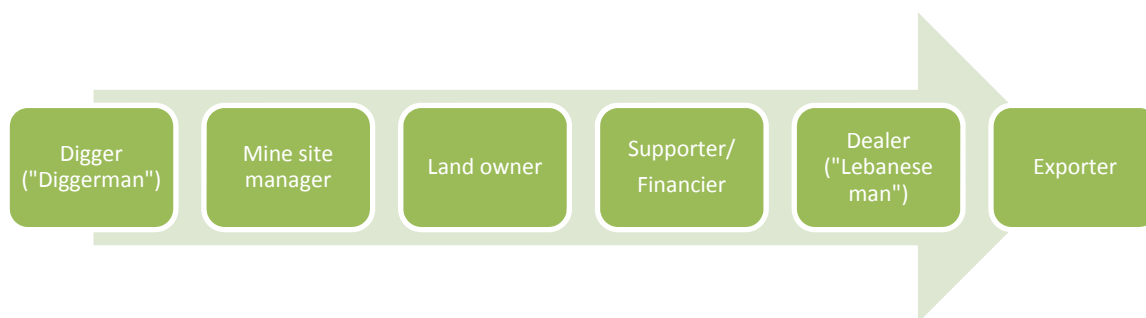


Treating: The diamond gang sieves the contents of the box using water from a diverted stream. Artisanal diamond mining is tedious work; a common motivation is the hope of finding a big stone.

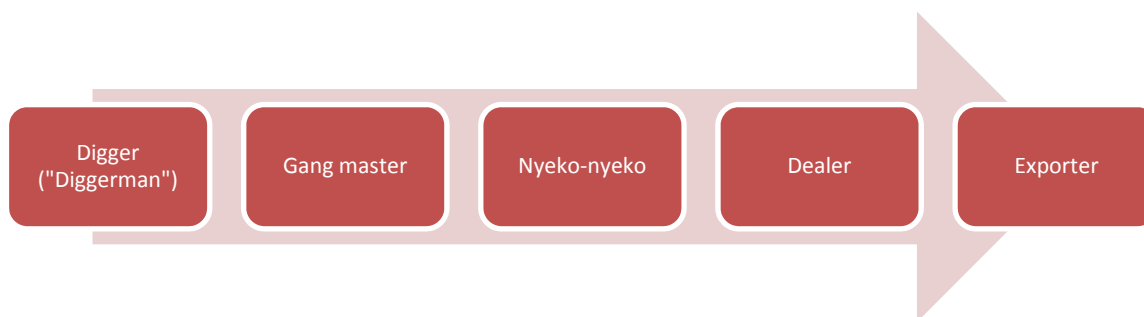


The artisanal diamond supply chain

Community members identified the legal diamond supply chain to be as follows:²⁰³



However, it is common knowledge that Sierra Leone’s diamonds are regularly smuggled out of the country. Receiving countries include Guinea and Liberia. The diamonds acquire the required papers at some point and then are sent onward to international buyers. The supply chain for this was reported to be as follows:²⁰⁴



ASM production chain

In this part of Malema chiefdom, diamond diggers typically work in gangs of five to ten people. They are usually male “youths”,²⁰⁵ which is 18-35 years of age in Sierra Leone. When on the site, researchers noted a couple of older diggers who were both over age 50. On the site visit, most people were Sierra Leonean and one Liberian was observed clearing brush as part of a mining gang. The Temne ethnic group from Sierra Leone’s northern districts dominates the mine sites here;²⁰⁶ for example, of the 19 people at one site visited by researchers, sixteen were Temnes, one was Mende, and two are Fullahs. One interviewee attributed that trend to the Temne’s general cultural tolerance for risk. Community members report that the other major ethnic groups on site include Mende, Kissi, and Loko. Locals say that when word gets out about production levels, people come to the area.²⁰⁷ The mining communities reported receptiveness to ‘strangers’ (outsiders). In artisanal diamond mining, it is difficult to work alone. One person summarized it as follows: given the intensive labour required, if one wants the benefits of mining, one has to share and there has to be teamwork. In diamond mining, an individual cannot do it by himself.

²⁰³ Participant responses in a workshop of mining area communities on 30 January 2013.

²⁰⁴ Participant responses in a workshop of mining area communities on 30 January 2013.

²⁰⁵ Participant responses in a workshop of mining area communities on 30 January 2013.

²⁰⁶ Participant responses in a workshop of mining area communities on 30 January 2013.

²⁰⁷ Participant responses in a workshop of mining area communities on 30 January 2013.



Figure 11: Mining supplies are widely available throughout the region. Machetes, pictured above, are used in to clear a mine site of brush. Then shovels are used to dig the pits. Near Jojoima, locally-made sieves for diamond washing cost Le14,000 each. Shovels cost Le55,000 each and pick axes cost Le30,000. Water pumps cost Le1.5 million- 2 million. Local mechanics are available to fix them when they have faults.

Diggers gain access to work on the site by securing permission from the financier, who will pay for his/her daily food, and therefore gets the right to approve all hires; the landowner also has the right to reject any new digger who wants to work on the site. Diggers organize themselves in groups of 5-10 individuals. All pits at the sites visited were dug by hand using shovels. There were no water-pumps in use during the site visit.

Diamonds are sold to the financier through a negotiation. This is usually an uneven match-up because the digger may be indebted to the financier, who typically has been pre-financing his food. The financier also typically has much more knowledge about the value of diamonds than diggers usually do. This is a source of immense frustration among the diggers; *'we feel like we are always being cheated'* was a refrain that researchers heard frequently. Community members say financiers are usually Lebanese or from the Maraka or

Mandingo ethnic groups.²⁰⁸

Workers typically arrive to work on the mine sites between the months of January through July, with some arriving as early as November. Some diggers choose to live in the mining towns, however the bulk of the diggers choose to camp close to their mine pits in order to thwart theft. It is apparently common for unguarded piles of diamond-bearing gravel to disappear in the night by fellow diggers or outside groups.

Other people present at the mining site

In addition to diggers, community members report that the following additional persons are present on the mine sites:²¹⁰

- Mines Wardens: They are on site during the application process. They demarcate the site, sort the legalities, and aid in the legalisation process.
- Mines Monitoring Officers: They monitor dangerous mining, legality, size of plots, production (types of diamonds, sizes, etc.), and sales. They also do a head-count of diggers at the site to ensure it is within the legal allowance.
- Financiers: They send their appointed monitors to observe the mining process, the number of labourers, and progress to ensure the financier's money is being well-spent. They also take supplies to workers and motivate workers by distributing cigarettes or other small items.
- Chiefs or other local authorities: They settle disputes on site, and play a role when there are questions about the legality of the site. They may also ask the landowners for a small portion of the plot to mine.
- Members of the chiefdom mining committee: They also check on the legality of mining in the area and monitor the mining processes. They also have a role to play in land acquisition.

Mohammed²⁰⁹

Mohammed is from Kenema and has been diamond digging for more than 40 years. He first came to the Malema area during the civil war and decided to stay. He is the oldest worker on the site at age 57. He says he will retire when he finds a stone big enough to let him do so. He has two wives and four kids that he supports by diamond mining. He has his own farm but he does not work it himself. He pays agricultural workers to work his farm for him while he mines for diamonds. It is more profitable that way; mining simply makes more money.

²⁰⁸ Participant responses in a workshop of mining area communities on 30 January 2013. The Maraka dealers are thought to be originally from The Gambia and some from Mali and Senegal. They started arriving in large numbers to Sierra Leone in 1950s to deal in diamonds.

²⁰⁹ This person's name has been changed to protect his privacy. Interviewed by Villegas and Konneh on 27 Jan 2013.

²¹⁰ Participant responses in a workshop of mining area communities on 30 January 2013.

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- **Traders:** They sell food and petty goods to diggers, such as cigarettes.
- **Religious people:** They offer prayers and sacrifices. In this area of Sierra Leone, a white flag is usually raised on the outskirts of diamond-mining villages to make peace with evil spirits associated with diamonds.

During the site visit, researchers noticed a small number of children on the site too, but they were not working. They were observing.²¹¹

Role of women in mining

No women were observed in the mining pits, though women in the area reported to the research team that women play an important part of the area's mining dynamics. Women's roles include the following:

- **Mine workers:** In some situations, women work alongside men, by fetching water for the mining process or by cooking on site.²¹²
- **License holders:** There are a few female ADM license holders in this region. In this situation, it is usually because they can claim the license on their family land²¹³ and have a team of diggers working for them.²¹⁴
- **Diggers and panners:** Community members reported that women are mostly involved in the panning of gold. They use calabash, rubber boots, and rockers in that work. In the gold-mining process, they occasionally find diamonds. Women currently work as diggers of gold in Dukor, Dambala, and Komejbuima.²¹⁵
- **Motivators:** If a woman is particularly encouraging to her husband, a common practice is for the male diggers to extract a portion of gravel at the site known as "kongoma".²¹⁶ Women are allowed to sift this for diamonds and it may give women income depending on the contents of the gravel.²¹⁷
- **Confidants:** Women report that men often tell them when they have stolen diamonds from the mine site. In addition, the interviewed women report, they can also become close to diggers and encourage them not to steal away winnings from the mines.²¹⁸
- **Petty traders:** Women community members reported that diamond and gold mining in the area has made petty trading lucrative for women because it has increased demand for goods in the area.²¹⁹ They said that petty traders' income is important income for families; in times of financial difficulty (e.g., when a diamond has not been found in a few weeks), this second income is a crucial source of financial support for the family.²²⁰

One woman commented: *"As long as your husband is involved with mining, you are involved too. If the husband is cash-strapped, you then need to fetch wood to sell, or do more back-yard gardening to support the family. When mining times are bad, women go through turbulence too to support this."*²²¹

Mami Queen Jimmy states that women also indirectly benefit from mining. The money chiefdoms receive from the Diamond-Area Community Development Fund (DACDF) benefits both men and women.

Role of the aged/elderly in mining

Community members said that the older members of the community disclose the production sites to youths. They also know the history of mining in the area, the locations of the historically productive sites, the boundaries of family land, and are sometimes the land owners themselves. On the site itself, they are often assigned to monitor washing/treating of gravel.

²¹¹ Site visit occurred on 27 January 2013.

²¹² Community meeting, 26 January 2013.

²¹³ Community meeting, 26 January 2013.

²¹⁴ Participant responses in a workshop of mining area communities on 30 January 2013.

²¹⁵ Participant responses in a workshop of mining area communities on 30 January 2013.

²¹⁶ See Levin 2005.

²¹⁷ Participant responses in a workshop of mining area communities on 30 January 2013.

²¹⁸ Participant responses in a workshop of mining area communities on 30 January 2013.

²¹⁹ Participant responses in a workshop of mining area communities on 30 January 2013 and interview with Mami Queen Jimmy on 27 January 2013 in Joijoma, Malema Chiefdom, Sierra Leone.

²²⁰ Participant responses in a workshop of mining area communities on 30 January 2013.

²²¹ Participant responses in a workshop of mining area communities on 30 January 2013. Translated from Mende.

Environmental & environmental health impacts of artisanal mining



Figure 12: Abandoned and unreclaimed artisanal diamond site in Malema chiefdom, approximately 8 km from GRNP boundary.

The 'acre' site is located along the Loi stream and the observed environmental impacts that the research team noticed at the site include:

- Diversion of the course of the stream;
- Permanent clearing of the vegetation; and
- Clogging of the stream with tailings (excavated earth) from the mine.

The resultant impacts of these activities are most likely to be:

- Destruction of the local aquatic ecology with impacts on downstream aquatic species;
- Disturbance to river flow affecting

- down-stream populations;
- Impacted water quality and contamination affecting downstream communities;
- Potential drying up of the stream due to excessive excavation and interruption of area hydrology;
- Removal and destruction of soils;
- Biodiversity impacts, such as the reduction in the variety and variability of flora and fauna at the site.

No reclamation is occurring on the 'acre' site or those nearby that researchers visited.

Mine site workers reported diarrhoea, dysentery, colds, malaria, and body aches as their primary health problems. These were reported as frequent and sometimes extremely serious. There were no toilets on the mine sites and diggers were using the trees and bushes as toilets, increasing the chance for zoonotic disease spread. The biggest accidents on the 'acre' site were machete wounds, which were described as generally minor and occur about once every two weeks. Treatment for these various ailments are apparently kept on site as a precaution.²²²

There was no underground mining reported at the workshop in Malema, however underground mining is known to take place in the region. It is an incredibly dangerous activity that has killed diggers when the tunnels collapse.²²³

Social & economic impacts of artisanal mining

Mining communities reported spending their money on house construction in nearby regional centres, on the purchase of motorbikes, to invest in businesses, to reinvest into mining activities, and to support secret societies in Sierra Leone.²²⁴

Community members reported the following benefits from mining:

- Mining enables financial independence, such as providing immediate cash for investments for businesses, homes, etc. "*We do not have to rely on outside loans because we have mining.*" Some participants noted that diamonds helps with agricultural development in the area because it gives them the funds they need to farm.²²⁵
- "*Our youths are not idle.*" Instead they are engaged and employed.

²²² Interviews during a mining site visit on 27 January 2013.

²²³ Personal communication between Babar Turay and Morie M. Turay, September 2011.

²²⁴ Participant responses in a workshop of mining area communities on 30 January 2013.

²²⁵ Translated from Mende. Comments of a male community member in Malema during a January 2013 community meeting on mining.

- *“Even before the war, our houses were built because of diamonds. After the war, we were able to rebuild our houses because of diamonds.”*
- *“During harvest, we use cocoa harvest to pay for things like school fees; diamonds supplement everything else.”²²⁶*
- *“We have motorbikes in this town because of diamonds”, referring to their ability to buy motorbikes with diamond finds. They also noted that most of the roads connecting villages were built because of diamonds. “People create roads to reach you.”²²⁷*
- Diamonds bring new friends to them. They come from north, south, and west to come and mine here. *“We always have new friends”,* said one digger at a community meeting. Respondents noted that before, the area was sparsely populated. Social cohesiveness was a recurring theme throughout research.
- Communities are expanding and people are choosing to build houses here because of mining.
- During the “hunger time” (wet season), rice is brought to this town because of mining.
- *“I have no other occupation that I know as well as mining. With mining, I’m able to educate my children. I built my home here and in another village because of this.”²²⁸*
- Members of the mining communities reported that a health centre had been built with the proceeds of diamonds; however it was destroyed during the war.²²⁹

Community members reported the following challenges from mining:

- It inhibits education for children because they are tempted to work in the mining pits instead of staying in school. *“The moment diamonds are discovered, children refuse to go to school.”²³⁰*
- It is capital-intensive and they lack the proper tools. *“There are times when we only have one working pump and [there are] four active pits. This is wasted time”* because it could be done faster with functioning water pumps.²³¹
- They struggle with diamond marketing, such as diamond valuation, etc. They do not have scales, colour detectors, and they do not know how to determine the clarity of diamonds. *“This affects negotiation; the dealer has all the power. He can cheat you... I can be a good miner but not a good marketer.”* This lack of knowledge directly affects their income.²³²
- Rehabilitation of mine pits is a huge challenge. *“How do we make our land good for production of cocoa and cash crops?”²³³*
- *“In other communities, people can easily finance the miners. The Gola Forest inhibits this because people do not want to finance us because of the forest.”²³⁴*

Communities identified the following services as coming from mining: DACDF income, roads (inter-community roads), financial services, trade, investment opportunities, more friends (seasonal or permanent economic migrants), and improved social connections.²³⁵ Mining brings them increased social and financial capital.

Community members identified their needs as the following:²³⁶

- To learn safe & sustainable mining procedures in the forest. *“We want to learn how to mine in the forest without destroying the trees.”²³⁷*
- To learn how to rehabilitate mined-out lands to boost area agriculture.
- They said they need more mining tools (shovels, water-pumps, etc.). They want more mechanisation, more tools and instruments. Currently they do all labour by hand and it is exhausting work.
- One person requested assistance in legalising his mining.
- An improved network of roads between communities.
- Diamond marketing training to help them get more profit from their diamonds.

²²⁶ Translated from Mende; comments made at a community meeting in Joppowahun village, Malema chiefdom, January 2013.

²²⁷ Translated from Mende; comments made at a community meeting in Joppowahun village, Malema chiefdom, January 2013.

²²⁸ Translated from Mende; comments made at a community meeting in Joppowahun village, Malema chiefdom, January 2013.

²²⁹ Participant responses in a workshop of mining area communities on 30 January 2013.

²³⁰ Participant responses in a workshop of mining area communities on 30 January 2013.

²³¹ Translated from Mende; comments made at a community meeting in Joppowahun village, Malema chiefdom, January 2013.

²³² Translated from Mende; comments made at a community meeting in Joppowahun village, Malema chiefdom, January 2013.

²³³ Translated from Mende; comments made at a community meeting in Joppowahun village, Malema chiefdom, January 2013.

²³⁴ Translated from Mende; comments made at a community meeting in Joppowahun village, Malema chiefdom, January 2013.

²³⁵ Participant responses in a workshop of mining area communities on 30 January 2013.

²³⁶ Community meeting, 26 January 2013 and at a workshop of mining area communities on 30 January 2013.

²³⁷ Translated from Mende; comments made at a community meeting in Joppowahun village, Malema chiefdom, January 2013.

- Several people mentioned wanting assistance in group-organisation in order to help them acquire more mining implements, and improve their mining generally.
- Access to finance, which they report is difficult by virtue of their occupation. One miner commented: *“There is a stigma placed on miners. People presume that if you are a miner, you must be a rich man, you don’t really need loans, and they refuse you. Other people are afraid to fund you because you are a miner. They don’t want to get involved with mining. If it’s a choice between a cocoa farmer and a miner, who will get the loan? They will always fund the cocoa farmer.”*²³⁸ For miners, apart from microfinance organisations and banks, their frequent source of financing comes from financiers and buyers, who will advance money and deduct it later from the value of any diamonds or gold that are found on the site he or she is financing. Some people reported that this relationship is a form of social protection, while others commented that this limits the ability of the miner to get the best price for his or her find.²³⁹



Figure 13: Mining communities in the Gola Forest region keep an eye out for “corundum” stones, which they say are an indicator for the presence of diamonds. Corundum is not known by geologists to be an indicator stone for diamonds (such as ilmenite, for example); corundum does not come from kimberlites but instead from the area’s underlying bedrock. However, the geology of eastern and south-eastern Sierra Leone (including the Malema chiefdom) is composed of Archean granitic basement rocks, which is a type of intrusive igneous rock. Corundum is known to occur in igneous or metamorphic rocks.²⁴⁰ In this region, kimberlites intrude the same igneous rock from which corundum originates. Given corundum’s “hardness and chemical resistance, corundum is often concentrated in alluvial deposits.... [making] its presence alongside diamonds in this area is not surprising.”²⁴¹

landowner or financier.²⁴⁴

There are rules for mining on the ‘acre’ site. These are referred to as the “site bye-laws” and include no physical attacks, no fighting, and no insults. If these rules are broken, mine workers are fined.²⁴⁵

Mining conflicts

There are conflicts on the mining site. Based on conversations with diggers, the license holder, and community members in the area, conflicts are usually boundary disputes between license holders or between mining gangs. For example, there are disputes over what to do when two mining plots (license areas) meet or when two mining pits meet. In a context where the contents of a mining pit determine one’s fortune, there is understandably conflict about what to do about the borders.²⁴² Local women report that there are sometimes conflicts between miners over women in the nearby town.²⁴³

In instances of disputes over mining plot boundaries at the ‘acre’ site, work is stopped and boundaries are retraced based on the map that the Mines Warden issued the license holder. In cases where pit borders are in dispute, local protocol requires the gravel to be piled and then divided evenly. This process is overseen by the mine manager (or whoever is deemed most senior), or by the

²³⁸ Translated from Mende; comments made at a community meeting in Joppawahun village, Malema chiefdom, January 2013.
²³⁹ This is explored in more detail in Levin and Gberie, 2006 and Levin 2005.

²⁴⁰ Personal communication between Villegas and Kate Malpeli of the US Geological Survey, February and April 2013.
²⁴¹ Personal communication between Villegas and Kate Malpeli of the US Geological Survey, February and April 2013.
²⁴² Interviews during a mining site visit on 27 January 2013.
²⁴³ Interviews during a mining site visit on 27 January 2013.
²⁴⁴ Interviews during a mining site visit on 27 January 2013.
²⁴⁵ Interviews during a mining site visit on 27 January 2013.

Mining in the Park

Members of the area communities said that they only mine in their community forests, but that diamonds are known to be in the GRNP because diamonds were found in the Park before the war. In addition, because diamonds are present in adjacent community forests and swamps, community members say there is every reason to believe that diamonds are in the Park as well. *“There must be diamonds there. Every swamp in that area is full of diamonds.”*²⁴⁶

Diamond production and incomes

The artisanal diamond sector in Sierra Leone is notoriously secretive.²⁴⁷ Newfound wealth can bring unwanted attention. As a result, there is almost every incentive for everyone in the production chain to dramatically understate their incomes to each other and to outside researchers. For example, when Villegas asked a group of diamond diggers at a Malema-area mining pit about their last find, they claimed it had been six months since they had last found a diamond despite the fact that visible evidence showed the site was a highly productive one.

This challenge of estimating incomes has been documented in Levin 2005 and Levin & Gberie 2006 as well as in Vlassenroot & Van Bockstael, 2010. Part of the challenge stems from the varying systems and combinations of payment that can happen, such as the situation where diggers share the profits; others where they share 30 per cent of the profits; and others where they only earn a wage and food. In this case, there is a distinction to be made between wages and *earnings*. Furthermore, since diamond production is less predictable than say gold or tin production for which diggers may get a daily find, it is practically impossible to estimate what an average income is at the local level. This stated, researchers did attempt to make income estimates based on mining costs and probabilities using a focus group of Malema-area mining villages. Researchers estimate that diggers make approximately US\$26 per day on average when terrace mining in this area and US\$14.6 per day on average when mining in swamps and lowlands. Calculations are explained in this report’s Annex D. Researchers acknowledge that these calculations may be high; they were calculated based on estimations and imperfect information. Other research in Sierra Leone places daily *wages* at approximately US\$1 per day but importantly they do not capture *income* information.²⁴⁸ Moreover, it appears that most research in Sierra Leone focuses on the famous diamond district of Kono, where alluvial diamond finds are known to be dwindling. Unlike Kono, Kenema District remains a bustling mining area that is full of diamond buyers and mining supply stores. Finally, researchers note that the average depth of overburden appears to be less in Kenema than in Kono (3 metres compared to 5 metres, respectively); this would mean that there is less money required for investment and higher profits as a result, as compared to places where deposits are much deeper. It is recommended that these income estimations are validated with community members who took part in the exercise and also compared against income estimations using an alternative methodology. If engagement increases in this area, there will no doubt be the opportunity to revisit these calculations.

The Malema, mining communities reported that, along with artisanal diamond mining, the major economic activities in the area include: petty trading, logging, vegetable gardening (peppers, cassavas, pineapple, groundnut, potato, yams, coconut, bananas, and beans), cash crops farming (cocoa, coffee, palm oil, and kola nut), and artisanal gold mining. The community of Jopowahun estimated that roughly 70 per cent of its residents were involved in mining in some way. A seasonal calendar of the area’s main economic activities can be found in Annex B.

²⁴⁶ Translated from Mende. Comments of a female community member in Malema during a January 2013 community meeting on mining.

²⁴⁷ Global Witness (2004); Levin, E. and Gberie, L. (2006); Blore, Shawn. (2008).

²⁴⁸ In his research, Paul Temple makes a distinction between the wages of artisanal and semi-mechanized miners, stating that the former earn between US \$1.25-1.50 per day, while the latter can earn as much as US \$2.50 per day. Temple, 2011.

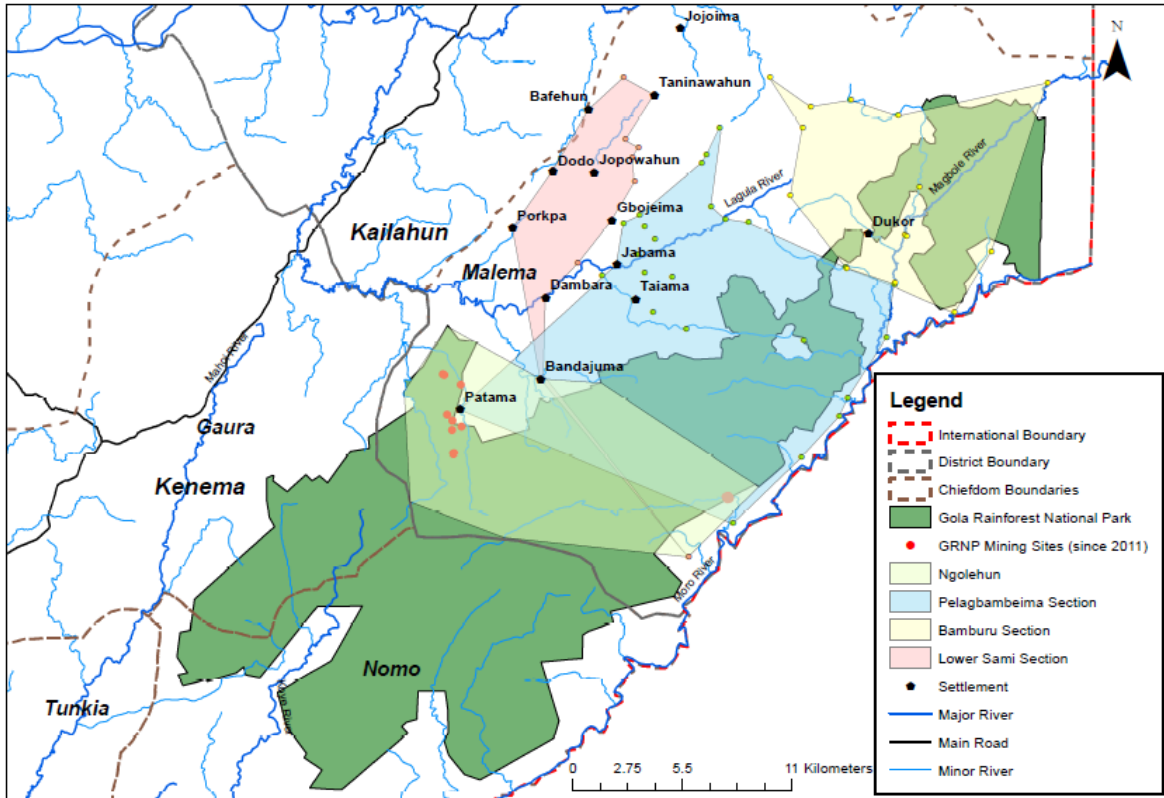


Figure 14: Historic mining sites of Malema chiefdom communities are shown in the areas outlined above. Locations are approximate will need to be validated with community members. The “Ngolehun” area is where ‘golden’ diamonds are thought to be mined and where women were once active in gold mining. The “Lower Sami” area is an important mining area for diamonds for the Dambala, Bandajuma, and Meycagema communities and apparently has women-friendly gold-mining sites. Pelagbambeima is also a historic women’s gold-mining area. The red dots indicate where border disputes have taken place between GRNP and Patama, a forest-edge community. *Map courtesy of GRNP (created March 2013 for ASM-PACE)*

4. CRITICAL ISSUES AND RECOMMENDATIONS

The different types of artisanal mining practiced in and around the park require different types of responses.²⁴⁹

4.1 For the Gola Rainforest National Park Programme

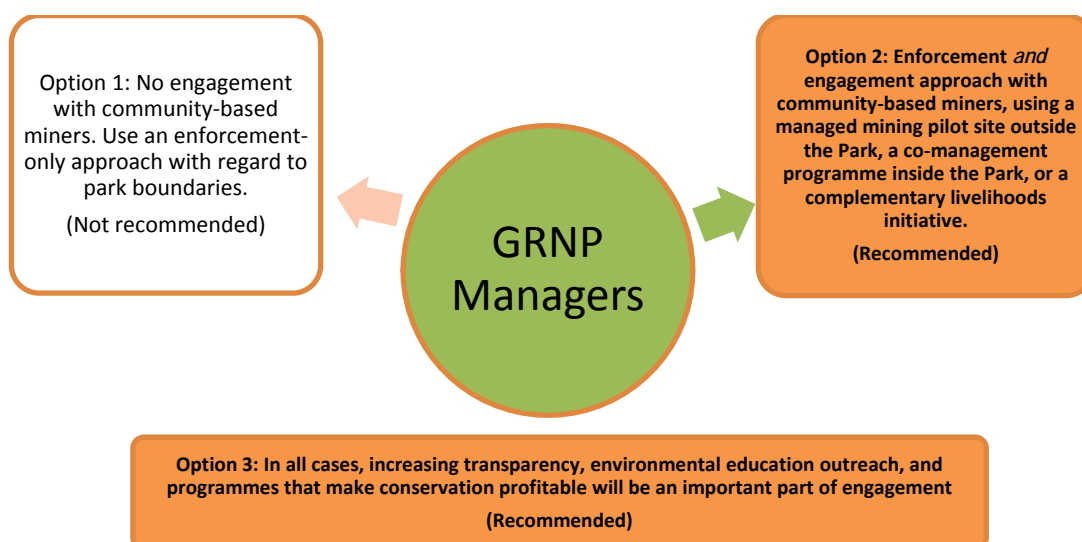
“Education is essential to this issue. If you educate the children, there will be less pressure on the forest.” – Paramount Chief Amara Bonya Vangahun of the Nongowa chiefdom.

“There have to be alternative livelihoods. That is the issue.” – Kate Garnett, Assistant Director of Forestry, Ministry of Agriculture, Forestry, & Food Security

“You need to have people committed and you need to motivate the indigenes so that they will have no need to come into the forest.” – Sahr Tamba, District Mining Engineer for Kenema District.

4.1.1 Addressing community-based mining

There are a number of responses possible in responding to and interacting with community-based mining.



Mining is thought to be the lifeblood of the selected towns that the research team visited in Malema chiefdom. The root causes of mining in this area appear to be, primarily, a lack of comparable alternatives that offer similar levels of income and the social capital that mining brings, as outlined in section 3. Additionally, the following factors likely play a role: (1) a lack of other skills and low levels of literacy; (2) a tradition of forest-dependence for livelihoods; (3) a tradition of mining in this part of the chiefdom. This stated, mining plays a critical role in the local economies of the neighbouring villages and major towns, as evidenced by the number of shops and services aimed at miners, reports from communities on how their mining income is spent, and their self-estimation of the number of people in the community that participate in mining in some form throughout the year (see this report’s

²⁴⁹ See Villegas et al. (2012) for a typology and analysis of known responses to date to ASM taking place in protected areas worldwide.

section 3).²⁵⁰ Researchers were repeatedly told by a variety of sources that mining is not going to go away any time soon. Instead, there must be constructive and strategic engagement.

While most mining in the Malema area appears to occur within community forests or on private lands that are outside of the boundary of the Park, there are concerns over any incidents of incursions into the Park. The root causes of these appear to be: (1) GRNP is locally known to have attractive mineral deposits; (2) area residents appear to be looking back at history and they consider the GRNP lands as their rightful lands; (3) there is a common perception in Sierra Leone that anything that belongs to the State should not be protected and should be used before community lands.²⁵¹

A number of engagement options are available here; some are more attractive than others.

Option 1: Adopting a security-only approach and choosing *not* to engage with community-based mining. (Not recommended)

The goal of choosing this option of non-engagement is to keep people out of the Park and to maintain strictly its integrity. One might justify it with the idea that engagement on mining issues with local communities will: (i) lead to environmental problems that are unmanageable; (ii) that it would be seen as condoning mining as a livelihood; or (iii) if mining is not registered, engagement might be seen as condoning illicit behaviour.

The trade-off involved with this option is that:

- i) Tensions between communities and Park authorities over mining around Park boundaries will develop, particularly given artisanal mining's tendency to spread rapidly horizontally due to inefficiencies;
- ii) A security approach using robust forest guards or police presence is an expensive and long-term activity. If security is decreased, there will immediately be a problem again because of the 'pull' factor of precious minerals in the Park; and
- iii) With a strict enforcement approach only, the Park risks accusations of human rights violations or, potentially, of being anti-development, which researchers know is not the case by any means.

Option 2: Enforcement *and* engagement approach with community-based miners, using a co-management, a managed mining pilot, or technical assistance programme. (Recommended)

Working towards a goal of containment, coexistence, and influence, there are a number of ways forward, as outlined below, including creating a 'managed mining' pilot site outside of the GRNP, taking a co-management approach and allowing managed-mining inside the Park, or attempting an alternative or supplemental livelihoods programme. Whichever strategy is chosen, it should be done whilst also maintaining current levels of enforcement around the Park.

A) *Managed mining pilot site outside the GRNP*

Gold and diamonds are known to be present in the Park. The goal of a managed mining pilot outside of the Park would be to test whether artisanal mining can be done in a controlled way and to agreed-upon environmental, social and safety standards in this region generally. Technical assistance can be introduced to slow the spread of mining through 'smarter' (more efficient) and 'greener' (more sustainable) methods, whilst miners' yields (and incomes) can be increased with less physical labour and less damage to the environment.

There are many reasons to pursue such a programme. Some of the justifications include:

- i) Promoting coexistence and harmony with local communities;

²⁵⁰ An economic survey of the area ought to provide a more detailed view of the economic contribution of the sector of the area; this type of assessment was not in this mission's limited scope. In Sierra Leone generally, artisanal mining is estimated to provide 10% of all employment. Source: Maconachie (2008) and Coakley (n.d).

²⁵¹ Observations by Sarmu and Turay. January 2013.

- ii) Increasing the environmental and social performance of current mining efforts. Through its involvement and support of such efforts, it gives the Park an opportunity to influence mining practices and reduce potential impacts on the Park. Legal artisanal diamond mining is organized in a strict hierarchical system, with the licensed miner and the landowner being the central point for establishment of mining rules. Environmental interventions would be best organized from this control point,²⁵² with town, section, and chiefdom-level mining authorities involved as observers and supporters;
- iii) With improved methods to mine existing land more effectively, the likelihood of incursions will decrease;
- iv) With the right partnerships and programmes, it would enhance local livelihoods and help with economic development of these areas, thereby giving the Park good press opportunities and allowing for some guided diversification of the economy;
- v) Enhancing overall management of the Park through enhanced community participation;
- vi) It could potentially be in line with community needs. In a multi-village community workshop held by ASM-PACE researchers in January 2013, communities appear to have a high interest in the following forms of assistance:
 - *Environmental rehabilitation demonstration/training sites:* Community members at the workshop expressed an interest in learning how to properly rehabilitate mined-out land into agricultural land suitable for cash crops. There is a wealth of experience in Sierra Leone on environmental rehabilitation of mining lands, thanks to the work of previous initiatives in other parts of the country, such as Foundation for Environmental Security and Sustainability (FESS) and others.
 - *Learning safe & sustainable mining methods:* One participant said that he would like to learn to mine without felling trees and without permanently destroying the land.
 - *Supporting self-organisation:* Some miners at the workshop expressed a desire to organize in order to more easily access finance. The Park could also help area miners achieve formality or better group organisation.
 - *Increasing the availability* of financing, through microcredit, revolving credit schemes, or other options. This would need to be accompanied by training in small business management to increase the miners' credit-worthiness and ability to manage their debt.
 - *Improving roads networks:* This was a frequent request from many interviewees, who complained bitterly that the poor conditions of the roads between towns inhibited economic opportunities in the area. When researchers met with the Life After Diamonds Project in Kono District, amongst its recommendations for diversification of livelihoods away from mining was to improve road networks in order to assist in getting crops to regional markets. Diversification of livelihoods, in their opinion, was critical in building economic resiliency in mining areas over the longer term.
 - *Diamond valuation training:* 'We feel like we are always being cheated' was a common refrain from community members who are involved in diamond mining in this area. They complained that they are excellent miners, but that their lack of knowledge in what their diamonds are worth leads to them being constantly being cheated by buyers, or so they perceive. Diamond valuation trainings for diggers have been done before in this area, in other regions of Sierra Leone, and in other parts of the region, such as through USAID's Property Rights and Artisanal Diamond Development (PRADD) Programme in Liberia. Introducing this type of programme, perhaps paired with a Kimberley Process traceability or formalisation initiative, would work to curtail capital flight in the area stemming from a basic lack of knowledge on diamond values.

An outcome of such a programme as described above would be more sustainable mining, with enhanced community benefits, whilst relieving some of the pressure on the Park. That site could also be used as a demonstration site to showcase best practice in mining in the area and used as a model that could be used in other protected area contexts within Sierra Leone, in the sub-region, or elsewhere.

²⁵² Further investigation is required in order to understand whether such an approach would be feasible with unlicensed/illegal ASM participants

The trade-offs for this approach include the following:

- i) Influx considerations. This is not insurmountable but it should be planned for and thoughtfully managed with community input and direction. It will be important to agree early on and with participatory rule-making, who is allowed to mine and rules for access, among other questions. Infrastructure will also likely follow large mining movements. This should also be managed with GoSL and community direction.
- ii) Engagement via a pilot site will inevitably put these areas under a spotlight. How to manage this will need to be carefully considered with the input of local communities and conservationists that have a stake in this working and in ensuring sustainable land use for the longer term.

B) A Co-Management Approach to allowing managed-mining inside the Park

All forms of mining are currently illegal in any national park in Sierra Leone and are likely to stay that way for the foreseeable future. However, as noted in this report, there are real ‘pull’ factors tempting intruders into the Park. Managed mining may be one potential response to this issue. However, it is highly recommended that before any mining is considered to take place within Park boundaries, there is first a pilot outside of the Park (see Option A, above) to test assumptions and test and adjust strategies beforehand. Legal issues would need to be resolved as well, through changes in park zoning classifications and potentially through legal adjustments.

If this proposal is advanced, one suggestion is to take a co-management approach and form a stewardship council comprising representatives of the local chiefdom, landowners, key national ministries, expert ecologists, and expert ASM advisors. The task of this council would be to help shape the initial “how, where, and who”, in the interests of achieving the goals of conservation through development and development through conservation, or the “mining for conservation” approach, whereby proceeds can be designed to benefit communities and fund conservation initiatives benefitting the Park. Basic questions to consider under this ‘managed mining’ co-management scenario could include: *what are the principles to guide design of the managed mining project in the Park? What exactly should the rules be? Who should set them?*

Co-management agreements have been tried elsewhere in Sierra Leone by involving community authorities in monitoring and enforcement through legal— and enforced— agreements. Recent examples include the agreements that the USAID-backed PAGE Programme established with the WaraWara and Kambui Hills protected areas. In these cases, forest governance agreements and forest management plans were informed by participatory rural appraisals and biophysical studies of the forests, and implemented using existing community governance structures. Similar community governance structures are already present in the Malema chiefdom areas in the form of village development committees and mining committees. These committees would be a natural governance bodies on which to build.

Guiding principles of a managed mining project in the Park could include the following:

- i) That it is community-benefit driven. Communities get immediate economic benefits from the forest without destroying ecosystem benefits for future generations.
- ii) Given the national park context, mining is done with the highest level of best-practice that is achievable. Current best practice within the artisanal diamond sector is hard to find, but DDI’s standards within Sierra Leone contexts would be a good place to start, as is drawing inspiration from Fairtrade gold standards, Rappaport “fair trade diamond” standards developed in Tongo fields, and CEMMAT’s Safer Mining standards developed especially for the Sierra Leone context.
- iii) A training course for potential miners with on-site monitoring continued teaching, and rigorous enforcement is recommended.
- iv) Mining should be kept to historic sites only with proven reserves. No additional exploration should be permitted.
- v) For environmental rules, in addition to the standards listed above, it would be advisable to also incorporate the following:
 - a. Avoid mining in water catchment areas. In these areas, mining activities may affect water availability and quality of downstream populations.
 - b. Do not build roads across the park, but human trails may be acceptable.
 - c. Park-edge sites should be prioritized, in consultation with forest ecologists regarding regeneration potential and other criteria. All types of ecosystems could in theory be mined, in

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consultation with forest ecologists and the previously-mentioned ecological stewardship council.

- d. No mechanisation should be allowed (e.g., bulldozers and dredges). Mechanisation increases efficiency but at great cost to the environment. This will need to be negotiated with potential miners and diggers.

There are several reasons for caution. These include:

- i) If access is granted to the Park, this may open up arguments of a “slippery slope” (for example, if one accommodates artisanal mining, why not timber?);
- ii) Influx considerations, additional people and business may move to the area, as will infrastructure, which often follows mining movements. How to manage this will need to be carefully considered with the input of local communities and conservationists that have a stake in this working and in ensuring sustainable land use for the longer term.
- iii) As with managed mining outside the Park, any project taking place in the Park will attract local and potentially international attention.

There are several reasons why an approach like this is attractive:

- i) It directly addresses the ‘pull’ factors of individuals seeking to mine in the Park and sets locally-agreed upon rules around it;
- ii) Security will improve in the mining areas of the Park when communities see themselves as completely involved and directly benefitting;
- iii) There will be a decreased dependence on a forest guards and will of the police to maintain the security of the Park.

With any project – whether inside or outside the Park—it is highly recommended that park management consider at least one gender-specific project amongst its responses and incorporate women meaningfully in every single initiative. Some examples of gender-specific programmes could include:

- i) A managed-gold mining pilot focused on women’s traditional mining areas on the park edge or in historic areas of the Park. This would utilize sites that women have been known to have mined on previously and compensate—even if minimally—for women’s reported economic displacement by active Park management.
- ii) Women can be trained as diamond and gold valuers, thereby incorporating them into central components of the trade.

It is recommended that an assessment be undertaken in the early stages of the programme to assess interest by local women to participate and in what types of roles (e.g. as diggers, miners, valuers, other).

C) Encourage alternative and supplementary livelihood programmes

In the authors’ experience, once a person is involved with mining, alternative livelihood programmes rarely work unless they offer the same levels of income and social security – such as food in the hunger months, friends, etc., as reported by villagers in this report’s section 3—that mining can bring. When mining incomes drop, diversification can happen on its own, such as the return to farming occurring in Kono District.²⁵³ However, that can be a painful period, and – ironically—mining may actually be the most environmentally friendly option if the suite of comparable alternatives include charcoal making, bushmeat hunting, or timbering. In the study area, most residents appear to be subsistence farmers involved in growing kola nut, cocoa, and other products (see Annex B for reported agricultural activities).

Given the GRNP’s reported interest in promoting cocoa and other similar cash-crops in the region as part of its forest corridor work and REDD work, upscaling past and ongoing work, environmental rehabilitation projects coupled with farming support projects could be a good way to increase diversification of livelihoods towards an activity (farming) that will persist once mining eventually ends. This stated, roads are an essential part of any serious agricultural support effort; they are needed to get goods to market. While there are trade-offs to roads from a conservation standpoint, it is important to emphasize the frequency in which a lack of roads was reported

²⁵³ See Maconachie (2011b); Pijpers, R. (2011). Also personal communication between Villegas, Turay, and the “Life After Diamonds Project”, Kono, February 2013.

to researchers, and how quickly their dearth raised ire. They are important from a community goodwill point of view, as well as any supplementary livelihood programme in which agriculture will be central. It will also be important to consider, “what is it the miners are looking for when they turn to mining?” and ensure alternatives or complement options fill those particular needs, as well as reasonably match the actual incomes that mining provides.

Mining cannot be replaced in the short term; however alternatives or complements can be strengthened. Such efforts would help to build long-term resilience in mining communities by reducing the overreliance on mining, and also reduce the idea that mining is the only option, or the option that pays best.

Option 3: Significantly enhance transparency, environmental education efforts, and programmes that make conservation profitable (Recommended for any situation)

In the course of research, it became very clear that communities and their leaders were making the following calculus: mining > conservation. That is, mining provides them immediate benefits and provides jobs in the short run, whereas conservation offers them a pittance (in their view). For any long-term success of a conservation project, locals must be convinced that it is in their immediate interest to maintain the integrity of the forest, and to keep others out too. The authors make the following recommendations:

A) Improve transparency in development funds

The GRNP has spent significant resources in local development assistance for the past five years.. However, increased communication and transparency on the development work was requested by several interviewees, and increased participation was requested by others. For example, Malema’s Mami Queen wants women to be a meaningful part of development decision-making, stating pointedly that women are the majority of the people in area communities. She says that to-date, they have not been adequately included in decision-making structures and GRNP staffing and she wants that to change.²⁵⁴

B) Improve environmental education outreach in the area

For many of the people the research team interviewed, it appeared to report authors that they needed more information about the non-cash development benefits of conservation. Therefore, along with Option 1 or 2 above, it will be important to directly address the mining-conservation calculus by strengthening environmental education amongst communities along the Park boundary so that ecosystem services are better understood. Based on observations from field research, it is important to educate people on the livelihood benefits the GRNP offers, such as the availability of water, stable land (fewer landslides), increased pollination of their crops, and so forth. Key to this education is explaining what will happen to the quality of life if these things are gone, such as walking long distances to access water, etc. It is important to clarify why the forest has been protected. Report authors understand that the GRNP already has active plans underway for reinvigorating environmental education efforts.

For these efforts, there are significant Mende cultural beliefs on which to build. The Mende is the largest ethnic group in the area and the Mende language is dominant in this part of the country. Before the war, there were reportedly widespread Mende teachings aimed at protecting and preserving the natural environment. Some of these include not killing animals that are mating, not killing a mother animal that has her offspring with her, and not eating anything that resembles ‘man’ (e.g., apes).²⁵⁵ In the Kono culture, there is an expression which states: ‘A man who is rich in culture is a man who understands his environment.’ This means that a person who understands which herbs grow in the area, also understands the cultural traditions associated with those herbs. Re-teaching cultural environmental practices and environmental parables as part of environmental education programmes in local communities and in any future engagement with miners can reinforce conservation messages.

²⁵⁴ Interview between Mami Queen Jimmy and Villegas, Turay, Sarmu in January 2013.

²⁵⁵ According to this report’s co-author, Daniel Sarmu, who is a native to the region and lives in Kenema District.

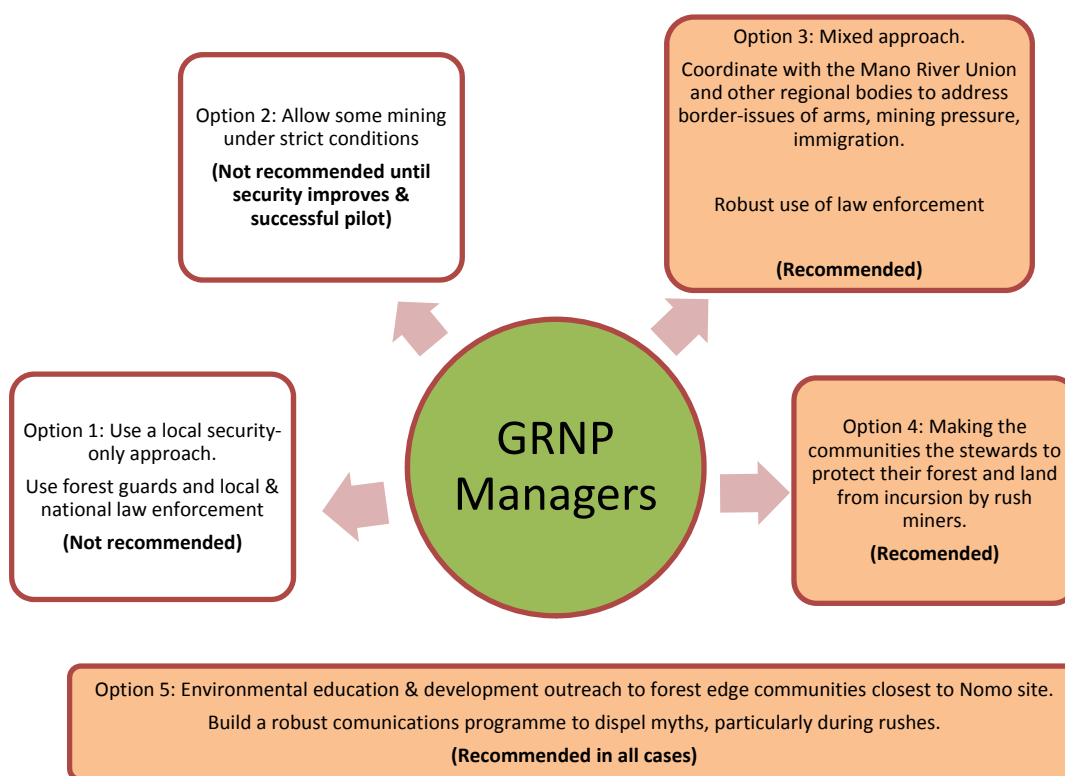
C) Increase programmes that make conservation profitable

Conservation is all too frequently seen locally as benefitting outsiders while locals suffer. However, there have been meaningful developments within the conservation sector to incentivize conservation by local people in the form of tangible financial benefits. One such programme is REDD, which “aim to make forests more valuable standing than they would be cut down, by creating a financial value for the carbon stored in trees.”²⁵⁶ The idea is to incentivise forest users to stop deforestation and “to protect, better manage and wisely use their forest resources, contributing to the global fight against climate change.”²⁵⁷ GRNP is currently laying the groundwork for a REDD ‘carbon financing’ project, which the Park believes has the potential to help address the sustainable management of the Gola forest region over the longer term.²⁵⁸

Mining in the GRNP requires local guides in order to gain access. Changing the willingness of local guides to assist in illicit activities for short-term gain will help address community and rush-mining in the Park.

4.1.2 Addressing rush mining in the GRNP

For GRNP managers and partners, there are a variety of engagement options available.



The on-going situation in Nomo presents a difficult situation for GRNP and its partners. The root causes of the severity of the Nomo Rush appears to be: (1) large populations of people without an alternative livelihood that is

²⁵⁶ For more information, see the UN's REDD programme page: <http://www.un-redd.org/UNREDDProgramme/FAQs/tabid/586/language/en-US/Default.aspx>.

²⁵⁷ For more information, see the UN's REDD programme page: <http://www.un-redd.org/UNREDDProgramme/FAQs/tabid/586/language/en-US/Default.aspx>.

²⁵⁸ The thirty-year vision for the projec is the following: “The GRNP project is a catalyst for peace, prosperity and national pride in Sierra Leone, ensuring that the globally important habitats, biodiversity and environmental services of the GRNP and wider Greater Gola landscape are conserved and that neighbouring communities are active environmental stewards of the natural resource base that underpins and enhances their livelihoods.” Source: Personal communication between Villegas and Tubbs, April 2013.

available to them or that can compete with mining; (2) a porous border with Liberia, where arms are widely available and where hundreds—if not thousands—of people are thought to be mining along the Liberian side of the international border; (3) the willingness of some members of forest-edge communities to assist and work for miners in the Park; and (4) the known deposits of easily accessible gold and diamond deposits located in the Park.

In recognition of the increasing security concerns, a coordinated response using both Sierra Leonean and regional authorities is highly recommended (Option 3). The GRNP is situated along a largely unsecured international border; it will continue to be impacted by regional dynamics unless GRNP partners are proactive about the issues that directly and negatively affect it.

There are a variety of responses available to GRNP managers and partners. These include the following:

Option 1: Pursue a local security approach only (Not recommended)

Thanks to its relationships with local security apparatuses, its committed cadre of local forest guards, and the will of the Presidency and judiciary to arrest and prosecute illicit mining cases, the GRNP has been able to enforce the law in a robust response to illegal rush mining of the past two years within the National Park. However, this option does not offer long-term solutions to what can easily be exacerbated by an international border. With this approach, the Park will be using a ‘sticking plaster’ (i.e., temporary fix) on the situation instead of taking a more proactive approach (see Options 3 & 4 below). Due to this reason, and on the reliance of the will and capacity of local police and judiciary to continue to prosecute, this course of action alone is not recommended.

Option 2: Allow managed mining (Not recommended until security improves)

The benefit of ‘managed mining’ scenario (similar to that outlined in section 4.1.1) is that it would address and eventually deplete what is a known pull factor into this section of the GRNP: its gold and diamond reserves. However, as long as the area is insecure, managed mining will be difficult – if not impossible—and is therefore not advisable until security improves and the completion of a successful pilot site outside of the Park in the Nomo Chiefdom.

Option 3: Pursue a mixed approach of regional & national engagement plus robust security (Recommended)

It is advised that the GRNP engage with national and regional authorities on this issue, which is likely to continue and become a source of increased conflict in the Park.

A) Regional engagement:

- i) The Mano River Union (MRU) is seeking to be increasingly active in the region. The organisation successfully ran a border post at the Guinea, Liberia, and Sierra Leone border and may be looking to expand its involvement in the region with similar efforts. The arms issue combined with the trans-boundary environmental project and the illegal mining issues may be the right opportunity for them to take a role along the Park’s border. According to a Freetown-based donor, if the MRU takes this role, there may be funds from donors who are interested in regional cooperation to make this investment.²⁵⁹
- ii) Not all goods coming through the border are important to monitor (such as foodstuffs); arms and armed individuals are a different matter entirely, particularly given the security issues in the Park and the gun laws of Sierra Leone.

²⁵⁹Personal communication between Villegas, Turay, and an aid agency official in Freetown on 4 February 2013.

- iii) Other areas of MRU support could be on harmonizing gun control policies, immigration enforcement, and on promoting management of the Liberian side of the Gola Forest, which is currently weakly managed and experiencing artisanal mining throughout it.
- iv) The other reason for MRU involvement on the border is of the instability the creation of the 'peace park' in Liberia may create. As the protected forest on the Liberia side becomes actively managed with accompanying enforcement, the GRNP should be prepared for an incursion into Sierra Leone from displaced Liberian miners. This needs to be planned for in sensitization efforts with Liberian miners so that they are clear on how illegal ASM in the GRNP will be handled by Sierra Leonean authorities, and in corresponding response plans by GRNP and border authorities.

B) National-level engagement

It is recommended that the GRNP and the Sierra Leonean government closely coordinate on the following:

- i) Develop rush-mining response plans inclusive of on-site monitoring, infrastructure, and community control measures.
- ii) Develop a formal relationship with regional governance mechanisms such as the MRU, particularly given the porous borders with Liberia and the prevalence of arms on that side of the border.
- iii) Use historic mine sites and geological survey information to forecast where rush or other illicit mining may occur and patrol those areas more regularly.
- iv) Facilitate the development of alternative livelihoods. As long as people bordering the park live in poverty and hand-to-mouth, it will always be attractive to go into the forest, particularly when there is rumour of a major gold or diamond discovery.
- v) Set up a reporting line on illegal mining with a reward system based on evidence and validation. There are mechanisms in existence that could potentially serve as a basis for such a system; for example, see the whistleblowing mechanisms developed by GIZ under the International Conference on the Great Lakes Region (ICGLR) Regional Certification Mechanism (RCM).
- vi) Continue rigorous enforcement of illegal mining. Based on discussions with communities, it appears to be an important – albeit controversial—deterrent.

Option 4: Work to make the forest-edge communities the stewards to protect their forest and land from incursion by rush miners. (Recommended)

In order to stop or reduce the numbers of rush miners working in the Park, it will be important to turn local communities from guides and workers in illicit mining into forest stewards who protect the forest. A combination of environmental education and financial incentives is recommended targeting villages where guides are known to originate, using local intelligence gathering methods or arrest records.

While it is important not to escalate mining-conservation tensions that might exist in Nomo, it is important to educate them on what they could lose if they or others decimate the forest in a rush mining situation. It may be useful to involve mining-affected downstream communities in this outreach to communicate the impacts that mining may (or may not) have on their livelihoods and access to water.

Option 5: In all situations (Options 1-4 above), it is important to intensify environmental education efforts to forest edge communities closest to the Nomo rush site and to develop a communications programme to dispel myths, especially during rushes. (Recommended)

In any of the above situations, it is important to improve communications around park-adjacent communities and focusing on environmental awareness; if communities believe the park is giving them specific, direct benefits assisting with their quality of life or livelihoods, they will be more likely to protect it or report illegal activities.

Finally, researchers noted that there were several myths circulating amongst the Malema area communities of impending resettlements or of GRNP's expanding borders. While some stories occasionally are created with a small kernel of truth, others are wholly created; the latter appears to be the case in this situation. A myth-busting communications and education programme is therefore advisable to maintain transparency and reputation. Such

a programme may also help stop or reduce the potential for rushes, particularly if it is used to communicate the active arrests.

5. CONCLUSION

This report has provided a situational analysis of artisanal mining taking place inside and immediately adjacent to the GRNP. As described in the report, the GRNP is currently facing pressure from mining from two different forms of artisanal mining: artisanal rush mining and community-based mining. Rush mining presents the biggest immediate threat of the two and community-based mining represents a longer-term issue that should be planned for and addressed in the near future. Each form of mining is very different from the other and will require separate types of responses, which are discussed at length in this report's section four.

“Push” and “pull” factors for artisanal mining in the park includes: (1) high-levels of unemployment or underemployment; (2) the known reserves of diamonds and gold in the forest based on pre-war discoveries, rumour of current-day finds, and forest-edge communities' presumptions about what is in the park based on what is in their community lands; (3) the long tradition of artisanal mining in the wider area; (4) the disruption of cultural education about the environment due to the war; (5) a limited understanding about why GRNP is protected, the environmental services the GRNP produces, and its relevance to people's livelihoods; (6) and finally, the day-to-day poverty calculus whereby mining and forest clearance is seen as more profitable than protecting the flora and fauna.

It is the recommendation of the report authors that as a first step the GRNP engage with community-based mining occurring on the GRNP boundary as a matter of long-term management of the boundary but also in the spirit of good community relations with its neighbours and also as part of achieving its goals to maintain forest cover on the outskirts of the park. Ultimately, the GRNP is looking for solutions that promote coexistence of mining and conservation; where one does not threaten the other. This is indeed possible and recommendations presented within this report are made with those aims in mind.

Where do we go from here?

It is recommended that the next step in this context is to conduct a validation workshop with the communities upon which this report focused. The validation should query the accuracy of this report and seek to generate additional recommendations and responses that report authors may have not considered. The meaningful participation of area mining communities and other stakeholders will be essential moving forward. No programme to address the impacts or spread of mining will be successful without their complete participation, approval, and local ownership, coupled with the right supports.

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ANNEX A: Research schedule

Date	Activity	Location
Tuesday, 22 January 2013	Interview with Jonathan Sharkah, Director of Mines, Ministry of Mineral Resources	Freetown
Wednesday, 23 January 2013	Meeting with Dr Kolleh Bangara, Director of the Environmental Protection Agency (EPA); Meeting with Kate Garnett, Assistant Director for Conservation, Ministry of Agriculture, Forestry, and Food Security (MAFFS)	Freetown
Thursday, 24 January 2013	Meeting with Richard Lloyd and Nicolas Tubbs of the Royal Society for the Protection of Birds (RSPB)/ Gola Rainforest National Park (GRNP)	Kenema township
Friday, 25 January 2013	Meeting with Paramount Chief Amara Bonya Vangahun of the Nongowa chiefdom; Interview with Tamba Vandi, Park Operations Manager of GRNP and Fomba Kanneh, Community Development & Relations Officer for Malema Chiefdom for GRNP.	Kenema township
Saturday, 26 January 2013	Meeting with PC Joseph Lamin Ngevao, Paramount Chief of the Malema Chiefdom; Meeting with Section & Town Chief of Jopowahun, the Deputy Mining Chairman, and large group of village residents with an interest in the meeting;	Jojoima and Jopowahun
Sunday, 27 January 2013	Site visits to the Jopowahun village mining sites; Interview with Mami Queen Jimmy of Malema District;	Jojoima and Jopowahun
Monday, 28 January 2013	Meeting with G.S. Kamara, Divisional Head of Operations of Kenema District Police; Interview with Okala Koroma, convicted illicit miner at the Kenema District Prison; Interview with Sahar Tamba, District Mining Engineer for Kenema, on 28 January 2013.	Kenema township
Tuesday, 29 January 2013	Meeting with Magistrate Stevens, Kenema District Court	Kenema township
Wednesday, 30 January 2013	Multi-village workshop in Jopowahun, with participation of 12 surrounding mining villages.	Jopowahun
Thursday, 31 January 2013	Travel to Kono	Kono District
Friday, 1 February 2013	Meeting with the Life After Diamonds Project	Koidu
Saturday, 2 February 2013	Site visit to Lake Sonfon to observe artisanal gold mining at the lake	Lake Sonfon & Kabalah
Sunday, 3 February 2013	Travel to Freetown	Freetown
Monday, 4 February 2013	Meeting with an European aid agency	Freetown
Tuesday, 5 February 2013	General work day	Freetown
Wednesday, 6 February 2013	Meeting with Kate Garnett, Assistant Director of Forestry, Ministry of Agriculture, Forestry, & Food Security	Freetown
Thursday, 7 February 2013	Depart for UK	Freetown/UK

ANNEX B: Seasonal calendar for mining villages in Malema Chiefdom

	January	February	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	
	Dry season						Wet season						
Mining	Swamp mining	→						After July, swamp mining is "over" due to "flood of water"	Gold mining in terraces	→			
Cocoa	Cocoa harvesting						"Harvesting and scaring of monkeys"	"Harvesting and scaring of animals"	Harvesting	→			
		Brushing plantations					Under-brushing						
						Trans-planting	→						
Coffee	Coffee harvesting	Coffee processing & sales	Coffee processing & sales								Coffee harvesting	Coffee harvesting	
	Plantation brushing & nursing	→		Nursing		Trans-planting	→			Under-brushing	→		

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Oil palm				Oil palm harvesting, processing & sales								
	Oil palm nursing & brushing					Oil palm nursing & transplanting			Oil palm nursing, tree falling, & underbrushing			
				Pegging	Pegging				Tree-falling			
Kola Nut				Harvesting	Harvesting						Harvesting	Harvesting
	Brushing	Brushing & Nursing	Nursing	Nursing	Transplanting				Under-brushing			
Bananas	Brushing	Processing & Sales							Harvesting			
				Brushing & Planting					“Planting and scaring monkeys”			
Petty trading												
Logging												
Rice				Nursing	Brushing	Brushing	Planting	Planting	Fencing		Harvesting	Harvesting

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farming												
Ground nut			Brushing	Brushing & Planting	Planting	Weeding	Weeding	Harvesting	Harvesting			
Cassava			Brushing	Brushing	Planting	Weeding	Weeding					Harvesting
Pepper							Brushing	Planting	Under-brushing	Under-brushing	Harvesting	Harvesting
Potato					Brushing	Burning	“Heap making”	Weeding	Harvesting	Harvesting	Harvesting	
Yams	Harvesting	Harvesting	Brushing	Burning	Planting							

ANNEX C: Calculations of Malema-area diamond digger incomes

Researchers estimate that diggers make approximately US\$26 per day on average when terrace mining in this area and US\$14.6 per day on average when mining in swamps and lowlands. This is based on the following exercise.

Community members involved in mining were asked to list their total costs for swamp/low-land mining and for terrace mining. This was documented as follows:

Terrace Mining

There was consensus that terrace mining in the area involves digging for 1.5 “fathoms”, which is six yards. With a gang of five diggers, gravel can be reached in one day. For terrace mining, costs were reported to be:

Terrace Mining Daily Costs		
<u>Item</u>	<u>Cost in Leones</u> (US\$1 = Le 4,100)	<u>Notes</u>
Fixed costs:		
License	1,100,000	
3 Shovels @ Le 50,000 each	150,000	
1 Pick Axes @ Le 30,000 each	30,000	
1 Machete @ Le 12,000 each	12,000	
3 _ @ Le 3,000 each	9,000	
3 sieve @ Le 12,000 each	36,000	
2 buckets @ 6,000 each	12,000	
	Fixed costs total:	<u>Le 1,249,000</u>
Daily costs		
10 cups of rice for 1 gang @ Le 1,000 each	10,000	
2 pints of palm oil for 1 gang @ Le 2,000	4,000	
Condiments	10,000	
Medicine	10,000	
Cigarettes	2,000	
	Daily costs total:	<u>Le 36,000</u>

Then participants were asked about the various daily scenarios they face on a mine site and they were asked to estimate how often each scenario occurs.

Daily Artisanal Diamond Mining Income Scenarios for Terrace Mining		
<u>Situation</u>	<u>Description</u>	<u>Likelihood</u>
Worst case scenario	No winnings for the day	30%
Fair scenario	Recover the day’s expenses	70%
Good scenario	Recover enough money in one day that can support one month’s work	70%
Best case scenario	“Winnings that can change your life”. Valued at US\$25,000 or above.	40%

From the above outcome, researchers presume the most frequent scenario is that which occurs 70% of the time. For the “fair scenario”, this means the gang is making Le 36,000 per day. In the “good scenario”, this means the gang is making at most Le 2,400,000 per day (this includes 36,000 x 30 days, plus fixed costs).

Presuming the gang works under the financial-sharing system dominant in the area, this 2,400,000 is further divided as follows:

- The landowner takes 30% of the winnings; in this case, Le 792,000

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- The financier takes 40% of the winnings; in this case, Le 960,000
- The gang shares the remaining 30%. This means 792,000 divided by five, which is 158,400. At the time of research, this was the equivalent of US\$38.

If one presumes that this scenario happens 70% of the time, as reported, then $.70 \times \text{US}\$38/\text{day} = \text{US}\$26/\text{day}$ is the estimated income per digger per day for terrace mining, if the above assumptions are true.

Swamp & low-land artisanal diamond mining

The same exercise was conducted for swamp mining income estimations. Costs were higher based on the need for petrol, engine oil, a “4-plug” for the water-pump, and a water pump that is used for this type of mining. Bulgar was then remembered as a food cost and added to the expenses list.

For swamp mining, fixed costs were:

Fixed costs were estimated as 1,000,000 for the license, 2,500,000 for the pump, and 630,000 for the supplies; the total is 4,130,000 (about 350% more expensive than terrace mining). Daily costs were estimated in 2 week intervals and then calculated by researchers to be 139,285 (about 250% more expensive than terrace mining).

Daily Artisanal Diamond Mining Income Scenarios for Swamp Mining		
Situation	Description	Likelihood
Worst case scenario	No winnings for the day	30%
Fair scenario	Recover the day's expenses	20%
Good scenario	Recover enough money in one day that can support one month's work	50%
Best case scenario	“Winnings that can change your life”. Valued at US\$25,000 or above.	20-40%

Researchers presumed the likely scenario was somewhere between “fair” and “good”.

Under this scenario, the gang is making Le2,855,714 per day (this includes 139,285 x 30 days, plus fixed costs).

Again, presuming the gang works under the financial-sharing system dominant in the area, this 2,855,714 per day is further divided as follows:

- The landowner takes 30% of the winnings; in this case, Le 856,714
- The financier takes 40% of the winnings; in this case, Le 1,142,285
- The gang shares the remaining 30%. This means 856,714 divided by five, which is Le 171,342. At the time of research, this was the equivalent of US\$41.

If one presumes that this scenario happens 35% of the time, then $.35 \times \text{US}\$41/\text{day} = \text{US}\$14.6/\text{day}$ is the estimated income per digger per day for terrace mining, if the above assumptions are true.

ANNEX D: Artisanal Mining in Outamba Kilimi National Park (OKNP) and Lake Sonfon

Outamba Kilimi National Park (OKNP)

Outamba Kilimi National Park is Sierra Leone's first national park, having been upgraded from a forest reserve in 1995. It spans 98,420 hectares of savannah and closed forests.²⁶⁰ It is home to several threatened species, including elephants, chimpanzees, the bongo, and others.²⁶¹ The area is thought to be home one of the highest concentrations of chimpanzees in Sierra Leone.²⁶² Considered part of the Upper Guinea Forest Ecosystem,²⁶³ it is one of WWF's Global 200 priority Eco-regions and ranks fourth in Conservation International "25 Global Biodiversity Hotspots", behind Mediterranean Basin, Indo-Burma, the Brazilian Cerrado and the Sundaland.²⁶⁴

Management of OKNP is according to the Forestry and Wildlife Acts of Sierra Leone (1972 and 1988 respectively), and enforced by a recent Forestry and Wildlife Policies of 2009. Because of its national park status, in theory there should be a strict ban on any form of human activities within the park boundaries and on activities around the area that are inimical to conservation efforts. Unfortunately, in practice, a lack of coordination between the mining and forestry departments, and weak forestry laws generally, has meant that forestry and wildlife policies have in countless times been flouted. For example, the Mines Ministry has issued mining licenses to miners and exploration licenses companies, in direct contravention to the laws and policies of Sierra Leone.²⁶⁵

Scale and scope of ASM

OKNP national park is highly impacted by artisanal mining of diamonds and gold. ASM started in the area in the late 1980s and early 1990s just before the war, with small family units operating mainly on family swamplands and along riverbeds. After the war and particularly since 2006, the scale of the mining has intensified, particularly on the Kamakwe axis and Bafodaia northern flank; Kamakwe area is largely outside the park borders but Kamuke is largely within them.²⁶⁶ In the Kamakwe area alone, there were more than 10,000 youths mining in 2006 and 2007 coming from all over the country and other countries in the sub-region.²⁶⁷ As of 2006-2007, mining was taking place within the park at Kortor Village – located at the entrance of the park – and outside of it, in the valley's swamps, floodplains and river channels. Today mining activities have intensified in the area and the total mining area has increased tremendously from Kathanta Yimbor Section in the Kamakwe area of Bombali District to Kamuke section of the Bafodaia Chiefdom, Koinadugu District. This is an area of approximately 50km in length. The banks of the Duguta stream, Mongo stream and Kabba streams right into the park area are currently being mined by large numbers of miners, especially in the dry season. During peak periods of the dry seasons, ten thousand or more miners can be found in this area. The intensity of the mines throughout the area is increasing year after year.²⁶⁸

Gold is the main mineral artisanally mined in the northeastern part of the reserve (Kamuke area) although artisanal diamond mining is also increasing gradually. Toward the Kamakwe area, diamond mining is the predominant activity, but some gold mining is also taking place.

Methods of production and organization

There have been no reports of chemicals in use in any type of mining in the OKNP area.²⁶⁹ To mine gold, artisanal miners use buckets, shovels, picks, machetes, washing pans, driers, picks, washing sieves or "shakers", "washing plants", rockers, and water pumps in their operations. Mining gold involves the removal of sand and other materials from the riverbed and using a pan to sift through the sand and gravel. For flood plains and riverbank deposits, it may involve clearing of the site, digging, extracting the gravel and then "washing" it to sift out the gold.²⁷⁰

²⁶⁰ USDA Forest Service International Programs, 2007

²⁶¹ USDA Forest Service International Programs, 2007

²⁶² USDA Forest Service International Programs, 2007

²⁶³ CEPF, n.d.

²⁶⁴ CEPF, n.d.

²⁶⁵ Personal communication between Babar Turay and the Honourable Philipson Kamara, September 2011.

²⁶⁶ Personal communication between Councillor Mordie Kamara and Mohamed Mansaray, Wildlife Superintendent of the MAFFS, and researcher Babar Turay in September 2011.

²⁶⁷ Personal communication between Babar Turay and community members from Kortor and Kamalone.

²⁶⁸ Personal communication between Councillor Mordie Kamara, Mohamed Mansaray, and the Honourable Philipson Kamara, Member of Parliament for the area. Interviews by Babar Turay in September 2011.

²⁶⁹ Based on personal observation and communication between Babar Turay and area-miners in September 2011.

²⁷⁰ Personal observation, Babar Turay.

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Diamond mining methods within the park are not different from other areas where diamond are mined.²⁷¹The first step in the process is negotiation and acquisition of land, assuming the land is already known for diamond production. The next step is clearing of the site by removing trees and other vegetation to access the topsoil. Removal of all soil or unwanted materials in the soil to access the diamond bearing soil (gravel) follows. In cases where soil particles have been piled on the land that is to be mined the removal of such over burden could be the stage that starts the process. The removal of the 'gravel' and piling it at a suitable washing site is the next stage. The washing of the gravel and handpicking of diamonds is the final last stage. In all the stages of diamond production, the following implements are used: cutlasses (machetes), axe (where trees are on the site), shovels, and picks ("kongodu"), washing sieves (shakers), rockers, buckets, and sometimes washing plants. Sometimes earth moving machines like caterpillars and excavators are used by some artisanal miners at the initial stage of the process.²⁷²

No conscious effort is currently being made to reclaim any of the mine pits. Sometimes rather subconsciously, mines pits are closed by overburden from another mining pit. This happens when an adjacent land to a mines pit is mined and the earth removed is sent to the nearby pit.²⁷³

Miner profile, roles, and organization

In the Kamuke area, miners are mainly the indigenous Limba people and people from just across the border in Guinea. The local Yalunkapeople are also starting to get involved in the mines.²⁷⁴ In the diamond mines of the Kamakwe area, people from all over Sierra Leone and other countries in the sub-region are involved. Until recently, the Themne tribe was dominant in the mines even though the area is a Susu-Limba dominated one. Many young miners have since gone seeking paid work in the Tonkolili District, where the African Minerals Company has started large-scale iron ore mining operations.²⁷⁵

Diamond miners in this area typically organize in groups of three to eight people. Although some of the operations are illegal, diamond mining in the Kamakwe area is mostly done through a financier and a license owner who, in turn, hires labour. In the Kamuke area, diamond mining is totally illicit because the area has not been legally approved for mining, and thus private arrangements exist between land owning families and miners²⁷⁶. Gold mining is mostly individually done or in much smaller groups and mostly amongst families or friends due to the high level of trust needed. Youths as young as 14 years old are mostly found in such operations. Diggers can range from age 14 to 55.²⁷⁷

Women miners are mostly found in gold mining operations in the northeast region of OKNP, where gold is mined by extracting the gravel from the riverbed and panning it. However, while they are concentrated in the northeast gold areas, women are also involved in the area's diamond mining operations. There, they represent about 10 per cent of the visible workforce and their role is commonly in the gravel extraction process, where they assist with passing the buckets to pile the gravel. They also transport water, prepare food for workers, or take other roles supporting mining operations, or do petty trading to complement their mining-husband's income.²⁷⁸

Mining occurs year-round, but is most intense in the dry season. This is due to the fact that most locals return to farm tasks during the rainy season, when demand on their time is high. Mining costs also increase dramatically in the rainy season due to the equipment and associated fuel needed to dewater the mine site, higher transportation costs for inputs, and higher medical bills for labourers working during the rains. Working in the dry season is much more efficient, safe, and affordable.

Corruption is rife throughout the mining sector.²⁷⁹There are reports that one must have political connections to mine in this area. It is reported that youths who spent considerable but uncompensated time in political campaigns are compensated by getting mining claims. Miners are generally more respected than farmers in public eye in Sierra Leone as they have connections, access to loans, access to liquid cash, and control resources worth millions of Leones, and so on. There are also reports that many, many political figures have mining plots in the mining fields in Sierra Leone.

Impacts

²⁷¹ Personal observation, Babar Turay.

²⁷² Personal observation, Babar Turay.

²⁷³ Personal observation, Babar Turay.

²⁷⁴ Personal communication between Babar Turay, Councilor Mordie Kamara, and the Honourable Philipson Kamara in September 2011.

²⁷⁵ Personal communication between Babar Turay and Mohamed Mansaray in September 2011.

²⁷⁶ Personal communication between Babar Turay and the Honourable Philipson Kamara in September 2011.

²⁷⁷ Personal communication between Babar Turay and Councilor Mordie Kamara and Mohamed Mansaray in September 2011.

²⁷⁸ Personal observation of Babar Turay, September 2011.

²⁷⁹ Revenue Watch, 2009

Artisanal and Small-scale Mining in Protected Areas and Critical Ecosystems in Sierra Leone

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ASM in the OKNP has brought a slew of economic, social, and environment and health impacts.

Economic Impacts:

- As miners are paid in cash for their mineral sales, mining has both allowed people another option for paid labour and one for which they are paid in cash, improving economic stability²⁸⁰
- Thanks to the arrival of mining investors, there has been an infusion of cash and economic buoyancy.²⁸¹
- For women, who are often petty traders, their sales and profits increase with the influx of miners, particularly in the peak mining periods.²⁸²
- Mining both favourably and negatively impacts farming. On the one hand, mining increases the chance for farmers to get immediate buyers for their farm products.²⁸³ On the other, mining is partly responsible for the area changing from the highest rice-producing area of Koinadugu to one that is now dependent on imported rice. This change is due to the fact that in the dry season, most of the abled bodied men and women are engaged in mining instead of farming.²⁸⁴

Social impacts:

- Mining has affected the culture of the indigenous Susu and Limbe people in the area. Diamond miners are clearing culturally significant flora, such as secret bushes.²⁸⁵
- Migration to the area is bringing people with different cultural backgrounds, which is changing the dynamics on the ground.
- Increased sexual abuse is said to have occurred in the mining communities. There is also an especially high rate of underage pregnancy and dropout rates in schools.²⁸⁶
- Most farm and swampland owning families adjacent to mining concessions are having to cope with the negative impacts of miner activity next to their land. Many have been affected by flooding due to river diversions, trampling of their crops, encroachment, and other impacts.²⁸⁷
- Land tenure and land rights are being grossly abused in mining areas. Interest from above (by highly placed members of government and chiefs) tend to bully land-owning families once mineral discoveries are made.²⁸⁸ In Kamuke, for example, the Paramount Chief and some government officials have gone into some initial arrangement to start exploring for diamonds and gold in the area without any consultation of the community people.²⁸⁹

Environment and health impacts:

- All washing of minerals take place in the rivers or the tailings end up in one or more of the rivers.²⁹⁰ The rivers in the area contain some of the most endemic and endangered aquatic and other animal lives remaining in Sierra Leone. The Pigmy hippos, African elephants, Leopards, duikers of varied species, etc. are all found in the area and depend on these rivers for habitat or source of water. Pollution of the waters by oil spills, mud, and hydrocarbons is a potential hazard for conservation efforts.²⁹¹ The pollution comes from water pumps, washing plants, and sometimes earth moving machines during clearing of the sites.

²⁸⁰ Personal communication between Babar Turay and Councilor Mordie Kamara, September 2011.

²⁸¹ Personal observation, Babar Turay.

²⁸² Personal communication between Babar Turay and Councilor Mordie Kamara, September 2011.

²⁸³ Personal communication between Babar Turay and a female petty trader, September 2011.

²⁸⁴ Personal communication between Babar Turay and Councilor Mordie Kamara in September 2011.

²⁸⁵ Personal communication between Babar Turay and forest guard who prefers to remain anonymous, September 2011.

²⁸⁶ Personal communication between Babar Turay and social worker who prefers to remain anonymous, September 2011.

²⁸⁷ Personal communication between Babar Turay and Councilor Mordie Kamara in September 2011.

²⁸⁸ Personal communication between Babar Turay and Mohamed Mansaray in September 2011.

²⁸⁹ Personal communication between Babar Turay and an area town chief who prefers not to be named, September 2011.

²⁹⁰ Personal observation, Babar Turay.

²⁹¹ Personal communication between Babar Turay and Councilor Mordie Kamara, September 2011.

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- The continuous noise caused by people, machines and other movements in the area is driving the animals into unfavourable environments.²⁹²
- Mining is once more extending into the park area and the clearing of vegetation that serves as habitat and food for the wild life in the area is helping to reduce their population and variability.²⁹³
- Mining has driven the increase in population and it has increased local food demand and pressure on local animals. For example, in October/November 2010, two elephants were killed in the Tambaka Chiefdom and the meat sold to people in and around the park.
- The degradation of lands as a result of mining especially without any remediation may lead to massive loss of plants species and eventually animals that depend on them, as well as weather and climatic changes in the area due to massive loss of forest and critical ecologies.
- Smaller streams that feed into the rivers running through or adjacent to the park are drying up due to diversions, infiltrations, and exposition as a result of clearing of covers.²⁹⁴
- Population increase in the mining areas comes with its attendant problems of congestion, disease transfer, price hike of basic commodities, water pollution, etc.²⁹⁵

Political Impacts

- Boundary tensions are gradually emerging. The Bafodaia Chiefdom was formed over decades ago due to the low population of the chiefdom. Today mining has helped increase the population of the area and the Kamuke section now think they are not benefiting from their mineral resource because the current PC is not from that end. The need for creating a new chiefdom unit is gradually coming to the fore.

Conflicts

- Inter and intra family conflicts are common in issues of resource access, particularly when families make up the mining units.
- There are no industrial mines operating in the area, however several companies have shown interest in the exploration for diamonds and gold. Furthermore, an unknown group of Ukrainians have established tents and have started coming in with minor equipment for the start exploration in the Kamuke area. If an industrial mine does begin operations, there is potential for conflict given the well-established ASM operations.
- Given shared economic goals, chiefs are observed to have better relations with the Mining Ministry than with the Forestry and Wildlife Authorities.

Past interventions

WWF, the US Peace Corps, the National Authorizing Office (NAO)/Government of Sierra Leone (in collaboration with European Union), LAMILE, and STEWARD have all played roles or had programmes regarding park management or alternative livelihood programmes in OKNP.²⁹⁶

Next steps for OKNP

There is a serious need for programmes that can specifically address conservation and mining issues in and around OKNP. The two impact each other and the lives of especially forest user communities by yet they tend to operate in separate programmatic 'islands'. Conservationists tend to look at mining as 'evil' and mining champions tend to see conservationists as impeding development.²⁹⁷ As a result, there is little dialogue between the two factions, partially evidenced by the lack of coordination between government ministries. A project that embraces these seemingly antagonized efforts will go a long way in addressing conservation and economic efforts in Sierra Leone.

²⁹² Personal observation, Babar Turay.

²⁹³ Personal communication between Babar Turay and Mohamed Mansaray, September 2011.

²⁹⁴ Personal communication between Babar Turay and a local forest guard who requested anonymity, September 2011.

²⁹⁵ Personal communication between Babar Turay and social worker who prefers to remain anonymous, September 2011.

²⁹⁶ Personal communication between Babar Turay and Mohamed Mansaray, September 2011.

²⁹⁷ Personal observation, Babar Turay.

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Some of the challenges such a program shall face include:

- The slow pace with which policy harmonization will take place as against limited project time lines.
- High financial expectations of community people/Chiefs/Government from mining activities and having to compromise that in some cases for conservation initiatives.
- Level of understanding of communities on conservation is low and thinks that conservation is about grabbing of lands from communities without giving back any benefits.²⁹⁸

Lake Sonfon

Lake Sonfon is a large freshwater lake in the northeast of the country. Lake Sonfon lies in the Sula Mountains in the Diang Chiefdom of Koinadugu District. The lake itself spans 5,180 ha²⁹⁹ and is surrounded by hills, open grassland and wooded savannahs. The lake and its streams are the principal water source for surrounding communities.³⁰⁰ The lake has tremendous cultural value and is the ceremonial centre for local communities. It is currently unprotected, but there are proposals for it to be established as a national park. Several conservation organizations are calling for its formal protected status, including IUCN.³⁰¹ Recently it has been earmarked as a wildlife corridor to link the Bumbuna environmental remediation project site and the Loma Mountains Protected Area that has been elevated to a National Park status. It is believed that the Bumbuna hydro project will displace mass number of wildlife through flooding and the lake being the nearest ideal ecology between the two areas makes it suitable for the creation of such a buffer. The lake and surrounding area provide a home for warthogs, bay duiker, Maxwell's duiker, bushbuck, buffalo, red river hog, and a variety of monkeys.³⁰²

There are two industrial mining companies active in the area. The Lion Mining Company has 42 square miles under the concession through an indigene of the land, according to local sources and Mines Monitoring Officers. The concession is supposed to be operating 200meters from the edge of the lake. The other mining company with concession in the area is the Mano River Resources. The Lion Mining Company has sub-leased part of its concession to thousands of artisanal miners, according to the Mine Monitoring Officer in Kabala.

Scale and scope of ASM

Unlike OKMP and Gola, Lake Sonfon area is exclusively mined for gold. Also, unlike other areas, gold mining here is mainly done by men due to the physical digging required to extract the ore and the pounding needed to break through semi-dense rock.³⁰³

Artisanal mining is thought to have started in the area in the mid-1990s and reached its peak after the Kono diamond fields began to decline around 2007.³⁰⁴ Artisanal gold mining is the most productive economic activity in the Koinadugu District. There are several mining sites such as Segbeya, Mankonie, Dalakulu, Sumuni, and Kasikoro that surround and operate partly inside the lake itself. There are approximately 12,000 miners active in the area, including women, men and children between 11 – 18 years.³⁰⁵ A Birdlife International report states that the gold mining taking place in the area poses the “greatest potential long-term threat to the lake’s ecology.”³⁰⁶

The forestry and wildlife departments of MAFFS have little or no presence in the area. There are little if any environmental NGOs working on the impacts of mining in this area, although Promoting Agriculture Governance and the Environment (PAGE) has asked one of its partners to do research on current mining activities and their human impacts in the area.

Methods of production and organization

Artisanal miners use simple implements and techniques in the mining of gold in the area. Implements used at the various sites include picks, shovels, washing pans, water pumps, rockers, and drying pans. No evidence of the use of chemicals of any type has been during the mining or processing of the ore. No reclamation of the sites was observed.

²⁹⁸ Personal observation, Babar Turay.

²⁹⁹ Arnold D. Okoni-Williams, n.d.

³⁰⁰ Arnold D. Okoni-Williams, n.d.

³⁰¹ IUCN, 1990.

³⁰² Terry M. Brncic, 2010

³⁰³ Per Babar Turay, September 2011.

³⁰⁴ Personal communication between Babar Turay and Mohamed Mansaray. September 2011.

³⁰⁵ Personal communication between Babar Turay and MambyKabba, who did his undergraduate dissertation research on the lake. September 2011.

³⁰⁶ Okoni-Williams, n.d.

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Miner profile, roles, and organization

Mining at these sites is organized in both groups and individual miners. Some of the groups are family units that include the husband, wife/wives, and children. The miners include the indigenous men and women from the chiefdom and near-by places, miners from Kono, other parts of the country, and Guineans. Some about 50 per cent of the miners are self-supported and some are engaged in the washing of tailings from other plots. Some of the miners however have financial supporters and they receive a share of any minerals found. Mining in the area is all year round. Mining in the area has reached this climax because of the rich mineral deposit in and around the lake; the gold mined from the location has proven to be among the highest grade of gold in the country – approximately 88-95 per cent purity—and also there is a 70 per cent chance of recovery for miners.³⁰⁷

Impacts

Artisanal mining and its associated livelihood activities are having significant environmental effects on the area. Lake Sonfon and its streams provide the main source of drinking water for local communities. Due to artisanal mining activities, however, that drinking water is being polluted from ASM tailings. As a result, safe drinking water is in very short supply. The Lake is also dwindling at an alarming rate due to siltation from the mines.³⁰⁸ The once-large population of water ducks, woodland birds, endemic reptiles and Egyptian geese that were found in the area and for which it was protected, is getting smaller by the day due to noise from mining operations, pollution, clearing of nesting sites and physical attack on the animals as major causes.

Deforestation of the area is also a significant problem and emanates from demand for construction poles, fuel wood, farming, and for poles used in the mines as fences and banks.

ASM's social impacts are mixed. ASM might be negatively impacting education rates. Many children are found mining or doing mining-related jobs in the area when they ought to be in school. However mining in the location has greatly improved the earning power of especially women; those who mine are able to acquire capital independently instead of needing to depend on a man's income to start a business.

Next steps

An in-depth review of current mining, its impacts, what conditions have changed and what needs to be done to manage all interests in the holistic management of the ecosystem will be an ideal next step. A program that can manage mining and its attendant problems and benefits in conjunction with best environmental management practices will save the threatened flora and fauna species in the area. Securing RAMSAR wetland status could be one way to raise the profile of this threatened ecosystem.

³⁰⁷ Personal communication between Babar Turay and a local Mines Monitoring Officer who requested anonymity. September 2011.

³⁰⁸ Personal communication between Babar Turay and MambyKabba. September 2011.

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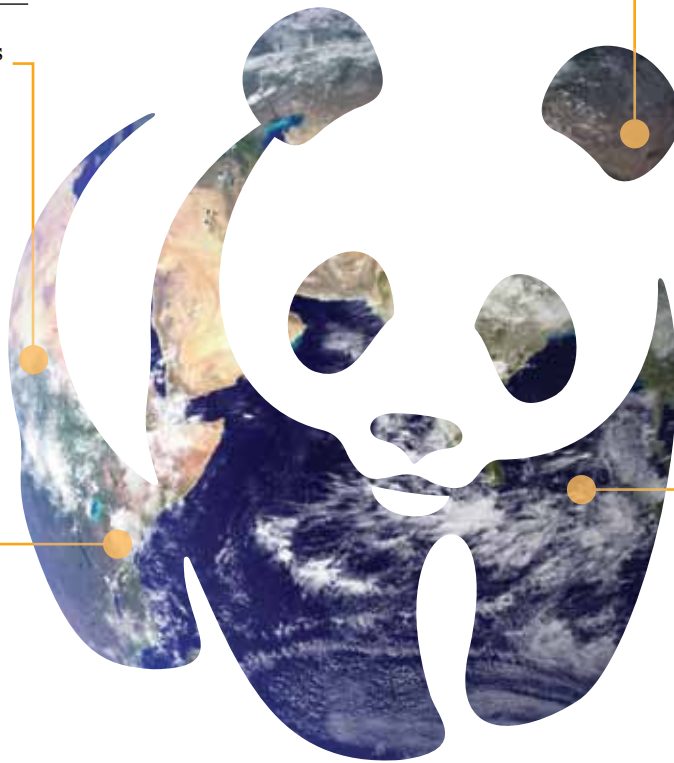


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