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IMPACT EVALUATION OF PROPERTY RIGHTS AND ARTISANAL DIAMOND DEVELOPMENT PROJECT II

Report of Baseline Findings

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ACRONYMS AND ABBREVIATIONS

μ	mean
σ	standard deviation
ASM	Artisanal and Small-scale Mining
CLO	Customary Landowner
CO	Contracts Officer
CONADOG	Guinean Association of Diamond Miners, Collectors, and Exporters
COP	Chief of Party
COR	Contracts Officer's Representative
DD	Difference-in-Differences
DNM	Directorate of Mines
ERC	Evaluation, Research, and Communication
FGD	Focus Group Discussions
GNF	Guinean Franc
GoG	Government of Guinea
H	hypothesis
ICC	Intra Class Correlation
IDIQ	Indefinite Delivery Indefinite Quantity Contract
IE	Impact Evaluation
IQC	Indefinite Quantity Contract
KP	Kimberley Process
KPCS	Kimberley Process Certification Scheme
LTD	Land Tenure Division
LTPR	Land Tenure and Property Rights
MMG	Ministry of Mines and Geology

NCDMOG	National Coordination of Diamond and Miners of Guinea
NUDMOG	National Union of Diamond and Miners of Guinea
RCT	Randomized Control Trial
RLRS	Service for Rural Land Resources
STARR	Strengthening Tenure and Resource Rights
USAID	United States Agency for International Development
USG	United States Government
USGS	United States Geological Survey

EXECUTIVE SUMMARY

This Baseline Report analyzes baseline data from an impact evaluation (IE) of the USAID-funded Property Rights and Artisanal Diamond Development Project II (PRADD II) program in Guinea. This baseline survey analysis has three objectives: 1) to improve understanding of the project context in the evaluation area; 2) to provide baseline estimates of key indicators and outcomes under investigation, which provides a benchmark for evaluating the eventual impacts of the PRADD II project; and, 3) to explore baseline differences across the IE comparison (intervention) groups that will be used to measure the PRADD II project's impact.

The Property Rights and Artisanal Diamond Development Project II (PRADD II) is an expansion of the PRADD project¹ that began in September 2013 in Guinea and Côte d'Ivoire, supported by the United States Agency for International Development (USAID) Land Tenure and Natural Resource Management Office. PRADD II aims to support these diamond-producing states' compliance with the Kimberley Process Certification Scheme (KPCS), strengthen internal control systems, and increase the volume of rough diamonds that enter the legal supply chain. Additional aims of the PRADD II program are to improve the governance of surface and sub-surface resources—including the primary property rights of landowners and the secondary land rights of miners—reduce land and natural resource conflict, promote economic development and improve the livelihoods of artisanal miners, and support vulnerable communities by strengthening tenure security.

This IE is focused on PRADD II's interventions in the Forécariah region of Guinea. The IE research strategy has been designed to rigorously assess PRADD II's impact on strengthening surface and sub-surface property rights, enhancing livelihood outcomes, reducing land and natural resource conflict, and promoting environmental rehabilitation of artisanal mining sites, with a particular focus on differential impacts on women and resource-constrained and other potentially vulnerable groups, including youth. Given the design and implementation of PRADD II, the evaluation measures the impact of PRADD II's "bundle of interventions" rather than a specific intervention. The evaluation will examine the changes in these outcomes over a 5-year period between 58 villages, covering 11 artisanal mining sites, in Forécariah prefecture (the treatment group) and 61 villages, covering 12 artisanal mining sites, in Kindia prefecture that will not receive the program (the control group). As designed, this is one of the first IEs conducted on the effects of a property rights intervention in the context of the artisanal and small-scale mining (ASM) sector.

Baseline data detailing sample characteristics, land use and management, customary land tenure, including tenure security, ASM practices, and investor activity are presented in this report.

¹ Piloted in the Central African Republic in 2007 and launched in Liberia in 2010, the Property Rights and Artisanal Diamond Development (PRADD) project is the first and largest development program focused on the KP and artisanal diamond mining challenges.

LAND USE AND MANAGEMENT

Initial findings indicate that there is no shortage of land in villages in the study area. Rather, the baseline data suggests that land suitable for farming is plentiful and accessible, and the key limiting factor for households who would like to increase their amount of cultivated land is instead a lack of inputs and labor.

Households are dependent on agriculture, trade and forest resources (charcoal production and cutting timber). In Forécariah, rice cultivation is the main agricultural activity, whereas Kindia is defined by the subsistence farming of vegetables, rice, cassava, and fruits. Most income comes from trade and the sale of forest products.

CUSTOMARY TENURE

The baseline data suggests that the customary land tenure system in the project areas remains robust and flexible. The local land tenure system as it is currently constituted seems to be able to effectively manage the full range of land tenure challenges that are encountered, including interactions with the government, investors, miners and other outsiders. The customary system for land allocation appears to work effectively in villages, and satisfaction with Customary Landowners (CLOs)—descendants of village founding families who are responsible for land allocation—and elders is high among respondents. Finally, despite very low levels of land documentation, respondents in the survey area report high levels of perceived tenure security.

The present system is a complex balance in which trusted village-level actors are able to negotiate with a range of different types of outsiders interested in land for farming, plantations, or mining. Although youth and women are in principle granted insecure tenure rights, there is mixed evidence of these groups being disadvantaged in practice.

ARTISANAL AND SMALL-SCALE MINING

With respect to ASM, baseline findings are that ASM is a full-time job for some young men, but more often it is a secondary or tertiary economic activity in both prefectures.

The customary tenure system remains the predominant means for gaining authorization to mine a site in these areas; this is largely an informal process that does not require miners to obtain a formal license to use the mining site. In Forécariah, CLOs organize, control, and monitor artisanal diamond mining. The data also indicates that government formalization of mining activities in the study area is not yet well established. For example, 10% (N=165) of the mining sites used by miner survey respondents in the last year had been mapped by the government.

Despite the close proximity of diamond mining and agricultural activities, there are minimal, low-level conflicts. Local communities have an effective customary system for managing conflict, involving key mediation roles for CLOs and village elders (commonly referred to as “wise ones” or “sages”). In addition, as introduced above, the baseline data indicates there is a large surplus of land for agricultural activities. Thus, strong social organization and an abundance of land currently serve to minimize conflicts between miners and farmers.

IMPLICATIONS

In terms of IE design issues, the baseline data indicates that treatment and control groups are poorly balanced on some key indicators and will need to be accounted for at endline data collection and analysis. Imbalance is a risk of any quasi-experimental DID design, and initial exploration by the study team for this Baseline Report indicates that standard pre-processing of the IE data through matching will successfully address this imbalance.

I.0 EVALUATION PURPOSE & QUESTIONS

EVALUATION PURPOSE

This report presents results from the baseline data collection completed as part of an IE of the USAID Property Rights and Artisanal Diamond Development Project II (PRADD II) program in Guinea. This IE is being implemented under USAID Contract Number AID-OAA-TO-13-00019, Evaluation, Research and Communication (ERC) Task Order under Strengthening Tenure and Resource Rights (STARR) IQC No. AID-OAA-I-12-00030. PRADD II is implemented by Tetra Tech under the Strengthening Tenure and Resource Rights (STARR) Indefinite Quantity Contract (IQC) and under the auspices of the USAID Office of Land Tenure and Natural Resource Management.

PRADD is the first and largest development program focused on the Kimberley Process (KP) and artisanal diamond mining challenges. The project represents a 5-year expansion of the PRADD program that began in September 2013, initially focused on Guinea and Cote d'Ivoire. PRADD II was developed to support diamond-producing States' compliance with the KPCS, and seeks to strengthen internal control systems and increase the volume of rough diamonds that enter the legal supply chain. In addition, PRADD II aims to improve artisanal miners' livelihoods and support vulnerable communities by strengthening the tenure security of both primary (land owners') rights and secondary (miners') rights, improving governance of surface and sub-surface resources, and promoting economic development.

This IE is focused on PRADD II's interventions in the Forécariah region of Guinea. It is designed to rigorously assess PRADD II's impact on strengthening surface and sub-surface property rights, enhancing livelihood outcomes, reducing land and natural resource conflict, and promoting environmental rehabilitation of artisanal mining sites. Given the design and implementation of PRADD II, the evaluation will measure the impact of PRADD's "bundle of interventions" rather than a specific intervention. The evaluation will examine the changes in these outcomes over a 5-year period between 58 villages, covering 11 artisanal mining sites, in Forécariah prefecture (the treatment group) and 61 villages, covering 12 artisanal mining sites, in Kindia prefecture that will not receive the program (the control group). As designed, this will be one of the first IEs conducted on the effects of a property rights intervention in the context of the ASM sector.

EVALUATION QUESTIONS

This IE tests a number of research hypotheses that follow from the evaluation objectives and program theory guiding PRADD II. These hypotheses form the basis for a series of development indicators that are measured at baseline and endline data collection, in order to assess the impacts of PRADD II on key development outcomes.

Specific hypotheses in this IE are that implementation of the PRADD II set of interventions will lead to:

RESEARCH HYPOTHESES² (H)

Hypothesis	Level of measurement		
	Community	Household	Artisanal miner
Reduced incidence of conflicts	X	X	X
Greater perceived tenure security, secondary land use rights, and protection of community land from encroachment by outside actors	X	X	X
Greater control, monitoring and legality of diamond production	X	X	X
Increased knowledge and awareness about KP provisions and associated national mining law	X	X	X
More transparent, accountable, and representative institutions for land and mining governance	X	X	X
Greater land investment to improve the condition of land and natural resources	X	X	
Reduced incidence of community land expropriation by the government without adequate consultation and fair and timely compensation	X		
Improved environmental and natural resource conditions	X		
Greater capacity for communities to negotiate mutually beneficial contracts between communities, the state, and private sector investors ³	X		
Improved household livelihood and welfare outcomes		X	X
Improved mining techniques			X

To test these hypotheses, the IE collects five primary sources of community and household level data to investigate tenure security, natural resource and environmental conditions, and livelihood outcomes. The baseline data for the evaluation was collected from October–December 2014 and includes:

- Population-based household survey data collected from 2,165 households in 104 communities;
- Surveys of 916 individuals involved in the artisanal mining industry, as indigenous and foreign diggers, washers and masters⁴;

² To promote a standardized research and learning agenda across different land tenure interventions, many of the hypotheses tested in the PRADD IE are also investigated across other IEs conducted under ERC.

³ This includes contracts for the use of customary land.

⁴ Masters are external operators who fund and control diamond production and trade. They rent the mining site from CLOs or purchase a parceled site, provide equipment and hire the miners.

- Surveys of 324 self-identified plantation owners⁵ and 108 CLOs⁶ in the Forécariah and Kindia mining areas in;
- Qualitative transcripts from a series of 35 focus group discussions (FGD) collected from 18 different communities. Focus group data was collected from 11 women-only focus groups, 10 youth, and 14 general groups of adults.

The pre-analysis plan for the evaluation (forthcoming) will include a more detailed technical discussion of indicators of these outcomes that the evaluation seeks to detect and the data source that will be used in each instance.

PROJECT BACKGROUND

This section briefly outlines PRADD II's program activities in Guinea. It highlights the specific interventions that are under investigation through the IE. As noted in the Introduction, given the design and implementation of PRADD II, the evaluation will measure the impact of PRADD II's "package of solutions" rather than a specific intervention. This section also provides background on the KP, artisanal mining, and customary land tenure in the treatment and control areas.

COUNTRY CONTEXT

Accounting for more than 90% of the country's exports, mining of gems, metals and other minerals is critical for Guinea's economic growth and sustainable development (Bermudez-Lugo 2012). Guinea is an important producer of alluvial, artisanal diamonds, ranking 12th in the world in 2011 with just over 300,000 carats exported. New alluvial diamond deposits have been discovered around the country. As a result, diamond mining is ongoing in most regions of Guinea, including the prefectures of Kindia, Coyah, Forécariah, Telimele (in Maritime Guinea); and Beyla and Macenta (in Upper and Forest Guinea) (USAID 2014a). Kerouané still remains the highest diamond producing Prefecture of the country. Figure 1.1 displays the prevalence of diamond occurrences across Guinea; the red highlighted region on the map indicates the location of the PRADD II program under evaluation.

THE KIMBERLY PROCESS

The KPCS is an international certification scheme designed to prevent conflict diamonds from entering legitimate trade on world markets. The KP lays out standards and requirements for monitoring the internal chain of custody for diamonds, from the mine site up the chain of custody to the point of export. KP participants must (1) certify diamond shipments as conflict free, (2) establish mine-to-export traceability systems, (3) implement national legislation and institutions pertaining to diamond mining, (4) possess internal controls and (5) commit to transparency and exchange of statistical data (USAID 2014b).

⁵ The IE is interested in documenting the prevalence of plantation agriculture as a livelihood in these areas. When Guinea gained independence in 1958, it was a leading exporter in the region of fruit crops such as pineapples and bananas, and many of the plantations that grew this produce were located in the coastal region, including Forécariah Prefecture. The socialist period (1958–1984) saw many farmers abandon cash crop plantation agriculture, but in most areas of Guinea entrepreneurial farmers have revived the practices.

⁶ CLOs are descendants of a village's founding family—the person who initially cleared the piece of land. They allocate use-rights on the basis of social customs and kinship relations.



FIGURE I.1 DIAMOND OCCURENCES IN GUINEA

Source: Chirico, et al. 2012

In 2012, the KPCS adopted the Washington Declaration, which formally incorporates economic development objectives into the KP. The KP has also recently spearheaded a regional collaboration for Côte d'Ivoire, Guinea, Liberia and Sierra Leone to comply with the KP, in hopes that a regional approach will allow the countries to harmonize internal controls and anti-trafficking measures. The PRADD II project team has been active in advancing this multinational goal.

The Government of Guinea (GoG) has been a KP participant since 2003, and in collaboration with the Guinean association of diamond miners, collectors, and exporters (CONADOG), has made important strides in formalizing the artisanal diamond sector to increase the proportion of diamonds entering officially-sanctioned marketing circuits. The government has implemented important policy reforms in the mining sector; a new Minister of Mines and Geology was selected in early 2014, and there is a new initiative to review the status of Guinea's Land Code. Furthermore, the Ministry of Mines and Geology (MMG) began demarcating mining plots in Forécariah in 2013—a process referred to as “parceling”—as a key step in increasing the state's presence and control over the artisanal diamond sector. To improve regulation and control over small-scale diamond mining, the MMG plans to continue conducting parceling operations across the entire watershed of Forécariah (USAID 2014a).⁷

⁷ Personal correspondence with PRADD: As of August 2014, there are a total of 130 parcels. MMG conducted additional parceling operation in 2014, and 14 of these parcels have been purchased.

The MMG has had limited capacity and resources to oversee production and ensure the control and monitoring of diamonds across all of Guinea’s diamond mining areas. Previous efforts under PRADD I were made to decentralize the Ministry of Mines and establish prefectural-level Regional Mining Offices in mining areas, each with a Prefectural Director of Mines. However, Kerouane Préfecture historically has been the only location where the MMG has sufficient staff to adequately monitor artisanal and small-scale diamond mining (ASM). At the Préfecture of Forécariah, the Prefectural Director of Mines until recently was the only official overseeing artisanal mining, assisted only by two unpaid local volunteers. During this time, parceling operations were implemented in Forécariah region, but only five of the 105 parcels were purchased (USAID 2014a). One reason for the low uptake of the initial parcels is that parcels were not chosen according to geological data indicating the probable presence of alluvial diamonds. To enable more effective parceling of the area, the United States Geological Survey (USGS) conducted a test project in the area to map diamondiferous sites through high-resolution aerial mapping.⁸ Three “junior experts” have also been brought on to the MMG at the prefectural level to assist with registration of diamond production in Forécariah.⁹

Despite the efforts to improve governance of the artisanal mining sector, serious regulatory deficiencies persist that threaten the country’s compliance with KP regulations, and lack of compliance with KP procedures could affect the countries’ ability to legally export diamonds. The KP tripartite actors of government, the diamond mining sector, and civil society in Guinea acknowledge that the GoG is failing to properly monitor the production of alluvial diamonds. In 2009, a KP Administrative Decision was issued on Guinea based on concerns over abnormally high export figures for 2007–2008 that were inconsistent with diamond production capacity. The problems of registration and traceability of diamond production—as well as the non-registration of miners—remain key threats to KP compliance. The GoG has been warned to undertake efforts to address weak internal chains of custody around diamonds by strengthening the monitoring of diamond production at the point of extraction (USAID 2014b).

LAND TENURE

Despite the strength of the current customary system, PRADD has identified a potential for conflict between external actors who can afford mining permits and the local customary landholders who cannot adequately protect their tenure security under current legal procedures. Parceling may exacerbate this potential for conflict because it gives permit holders exclusive subsurface mining rights for a renewable period of one year. Although Article 123 of the Mining Code states that “A mining right does not extinguish a property right,” the surface rights of customary land owners have not been officially recognized by the MMG, and customary owners do not have formal documentation for their land rights. Moreover, formal mechanisms are not in place to ensure that customary land holders are compensated for mining activities that take place as part of the parceling system, including compensation for the environmental rehabilitation of exhausted sites.

The Government of Guinea has yet to implement policies and laws that effectively clarify and secure customary land tenure. The Land Code of 1992 has not implemented formal procedures for recognizing and formalizing customary rights in rural areas. Under Article 9 of the Land Code, land owners can only formalize their property through an expensive and technical registration process that is not feasible for rural communities. Although the state issued a land policy directive for rural areas in May 2001, there

8 http://www.usaidlandtenure.net/sites/default/files/USAID_Land_Tenure_PRADD-II_Guinea_Snapshot_August_2014_0.pdf

9 http://www.usaidlandtenure.net/sites/default/files/USAID_Land_Tenure_PRADD_2_Snapshot_July_2015.pdf

remains an absence of viable administrative procedures through which customary land holders can receive formal documentation.

Against this backdrop of uncertain legal protections for rural land tenure, the MMG has been parceling alluvial plains for artisanal and small-scale diamond miners, and subsurface rights appear to be given a higher priority—to the detriment of existing surface rights. The parceling process is designed to allow the government to clarify and strengthen the access to sub-surface rights. However, the land undergoing parcellation is land held under customary ownership, and there are direct implications for the land tenure rights of communities affected by the parceling process. This process has not been based on geological evidence and does not include adequate mechanisms to compensate surface right holders for harms associated with mining activities. As such, without intervention the parceling process may reduce the tenure security for surface right holders and increase the potential for conflict between communities and miners/the government (USAID 2014a).

These are the development challenges that PRADD II will seek to address through its program activities over the next 5 years.

PROJECT INTERVENTIONS

The central objective of PRADD II is to increase the number of alluvial diamonds entering into the formal chain of custody, while expanding benefits accruing to diamond mining communities. To this end, PRADD II will strengthen the capacity of formal government, local customary institutions, civil society, and the diamond sector to enhance the monitoring of diamond production. From 2014–2019, PRADD II will implement interventions to improve economic development and clarify and strengthen surface and sub-surface property rights across local communities in the Forécariah region. Activities include piloting approaches to formalize customary tenure to surface rights and introducing refinements to the existing system of demarcating and parceling mining claims.

In Guinea, PRADD II is defined by four main activities:

Activity 1: Clarification of Land and Property Rights—PRADD II will support the clarification and strengthening of surface and sub-surface rights. The local-level interventions under evaluation in this Activity set include (1) the formalization of customary surface rights and (2) local capacity building for conflict resolution. In particular, to strengthen the security of surface rights for CLOs, PRADD II will promote land tenure formalization in rural areas through the new National Service for Rural Land Resources (RLRS).

Activity 2: Strengthening Governance and Internal Controls—Activity 2 seeks to increase control and improve monitoring for diamond production from the mine site up the chain of custody to the point of export. The project will support the demarcation of reserved zones for ASM. PRADD II will provide technical and logistical assistance to MMG through the ASM Division to demarcate and geo-reference the entire proposed zone of Forécariah that the GoG classifies as having artisanal diamond mining potential. This will serve as the foundation for parceling operations on sites that have been identified as bearing diamond potential. Besides strengthening the presence of the government, PRADD II will work with MMG and CLOs to refine the current parceling system to include a greater role for CLOs in the administration and monitoring of diamond production.

Activity 3: Economic Development in ASM Communities—Activities 3 and 4 represent complementary activities to the formalization and governance efforts. Activity 3 is designed to improve economic development in ASM communities by diversifying local livelihoods and supporting miners to increase the profitability of the ASM sector. PRADD II will introduce and train miners and communities on improved mining techniques to maximize productivity, mitigate environmental damages, and improve land rehabilitation. PRADD II will also provide technical and logistical assistance to miners and their communities for organizational development, financial management, diamond valuation, diamond marketing, and access to microfinance opportunities. Finally, the project will support alternative livelihood activities that contribute to both livelihood diversification and the rehabilitation of mined-out sites.

Activity 4: Public Awareness and Outreach—Activity 4 is designed to raise awareness and understanding of policies, laws, and regulations related to protecting and enhancing the security of tenure to surface and sub-surface resources or adopting improved mining practices. This Activity involves local communication and outreach on themes such as the Mining Code, the Land Code, the steps and procedures for formalizing surface and sub-surface rights, and the obligations of the KPCS.

Under each of these broad areas, PRADD II will implement interventions at multiple administrative levels and across a range of actors. For example, as described in more detail below, PRADD II will be working to build the capacity of the MMG, in addition to a focus on micro-level community engagement. The IE is charged with investigating the treatment effects of PRADD II's *community* level interventions and *local impacts* on governance, tenure security, conflict, resource condition, etc..

For more information on the specific project activities, please see Annex II: PRADD IE Design Report.

2.0 EVALUATION METHODS AND LIMITATIONS

ARTISANAL MINING IN FORÉCARIAH AND KINDIA

Diamond occurrences are present on the alluvial plains found throughout the treatment and control sites in Guinea’s Guinée-Maritime region. Forécariah and Kindia prefectures are located in the Atlantic-draining Konkouré River basin and are defined by small-scale mining where artisanal diamond miners utilize open pit methods without the aid of most mechanized tools and equipment.¹⁰

Forécariah and Kindia prefectures are located in the Kindia Region of Southwestern Guinea where the dominant ethnic group and language is Soussou.¹¹ Forécariah prefecture is 100 km from Conakry, covers an area of 4,200 km² and has an estimated population of 136,000, with a density of 32 inhabitants per km².¹² Kindia prefecture is 137 km far from Conakry, covers an area of 9,648 km², and has an estimated population of 483,284 inhabitants, with a density of 50 inhabitants per km².¹³ The control sites for the evaluation are located in Damakanya and Frigiagbé sub-prefectures.



PHOTO CREDIT: HEATHER HUNTINGTON

FIGURE 2.1. MINING SITE IN FORÉCARIAH

Forécariah was selected as a site for PRADD II due to its inefficient and unproductive mining system and the illegal and informal nature of most diamond sales. The administrative structures to ensure compliance with the KP are not present in Forécariah. These bodies include the Artisanal Mining Division of the Directorate of Mines (DNM), the Anti-fraud brigade, the Permanent Secretariat for the KP, and the National Bureau of Expertise (Diamonds and Gemstones). In addition, there is extremely low uptake of parceling in the study area, although it represents a priority for the GoG to ensure compliance with the KP. Parceling is expected to facilitate traceable diamond production, improve output monitoring and fund the restoration of environmental rehabilitation. ASM activities often have harmful environmental impacts such as deforestation, loss of biodiversity, soil erosion, habitat destruction, introduction of invasive species, and siltation and pollution of water bodies or alterations to rivers’ courses. For example, Figure 2.2 (below)

¹⁰ A site is cleared and the topsoil removed. Next, miners search for ilmenite and mica and dig down to the gravel layer that contains diamonds. The gravel is washed and sifted for diamonds. Most digging is accomplished using hand tools, but there is some use of water pumps powered by small generators.

¹¹ Kindia prefecture is more ethnically diverse than Forécariah—with a greater presence of Mandinka and Fulani herders.

¹² <http://www.geohive.com/cntry/guinea.aspx>

¹³ Ibid

is a photograph of mined out sites in the study area that were not restored. Overall, formal parceling is subject to the following limitations and challenges in Forécariah(USAID 2014a):

- Lack of local knowledge and awareness of mining and land laws;
- Lack of state capacity to manage and monitor the parcels;
- Absence of geological data to inform parceling; and
- Unaffordable permit costs for local communities (2.5 million Guinean Francs (GNF)/ US \$357 per parcel).

METHODS

This IE uses a Difference-in-Differences (DD) design that compares outcomes in the PRADD II treatment areas in Forécariah prefecture to those measured in control areas in Kindia prefecture.

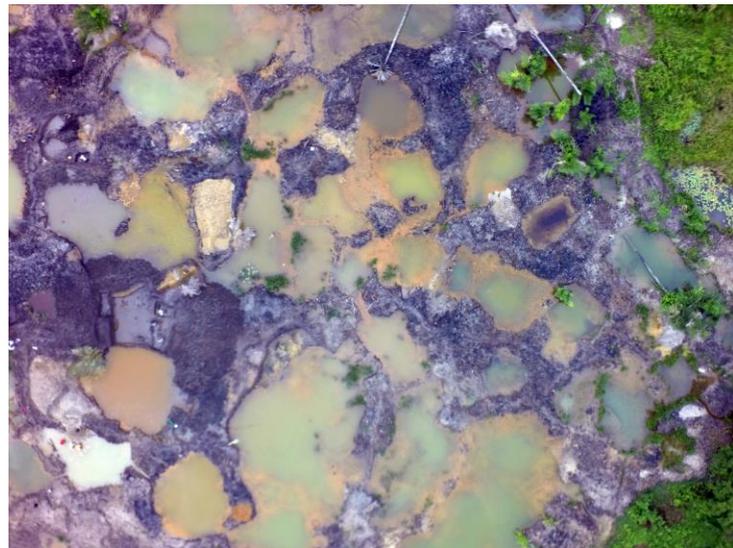


PHOTO CREDIT: PETER CHIRICO / USGS

FIGURE 2.2. UNRESTORED MINED OUT SITES

DD is a strategy that uses data with a time and control group dimension to control for unobserved and observed fixed confounding factors. DD is one of the most frequently used methods for IE. In the context of the PRADD IE, a DD method will compare the changes in outcomes over time between villages receiving the PRADD interventions in Forécariah and villages in Kindia that are not involved in PRADD. Given the project implementation plan, a randomized control trial (RCT) or experimental design was not feasible for the PRADD II evaluation. The DD approach represents the next best quasi-experimental evaluation technique for analyzing the impact of the program.

For the PRADD IE, the DD method will be implemented as follows. The “first difference” in the DD method represents the before and after effect in the treatment group; this controls for factors that are constant over time for the PRADD treatment areas. The “second difference” represents the before and after difference in the control group to control for outside time-varying factors. Finally, the first difference is subtracted from the second difference to generate the estimate of the treatment effect.

DD enables analysts to take into account any differences between treatment and control groups that are constant over time, but are not attributable to the program itself, in the analysis of program impacts. This is an important strength of the method, because it controls for time invariant observable and unobservable differences between treatment and control groups, which can otherwise confound the estimates of program impact. A useful implication of this is also that the treatment and comparison groups do not need to have the same pretreatment conditions, although they do need to experience the same broad trends (outside of the program intervention itself) over the time frame of the IE, for the DD to be valid. In other words, the control group must be subject to any broader influences which also affect the outcomes of interest that are experienced in the PRADD II sites in the absence of the program. This is called the “equal trends assumption”. Although the treatment and control areas can differ in their baseline characteristics before the implementation of the PRADD II program, they cannot

be subjected to different trends in external influences during the evaluation period such that their trajectories are no longer similar, even in the absence of the program intervention. The key limitation to the validity of DD designs is, thus, that they are not be able to effectively compensate for or eliminate the confounding effect of differences between treatment and control that change over time and also affect the outcomes of interest (Abadie 2000).¹⁴ This assumption represents the key limitation of DD—it cannot control for time-varying differences between the treatment and control groups. For example, if another donor initiated an ASM or land tenure intervention in Kindia in 2016—or an ethnic conflict affected one area disproportionately in 2017—the DD would not be able to account for or control for the confounding influences of these events in the impact estimates that are obtained from the DD analyses.

Please refer to the Balance Section of this report and IE Design Report in Annex II for a more detailed discussion of the strengths and limitations of the DD method for this evaluation.

The selection of the control group that will serve as a valid counterfactual is also critical to the validity of the study. The control areas were identified in collaboration with PRADD II. Using mining sites in Kindia as a control group for the Forécariah treatment areas appears to be the most suitable approach for creating a plausible counterfactual. After discussing the methodological requirements of the IE and challenges of program implementation in Forécariah, ERC and PRADD identified villages around active

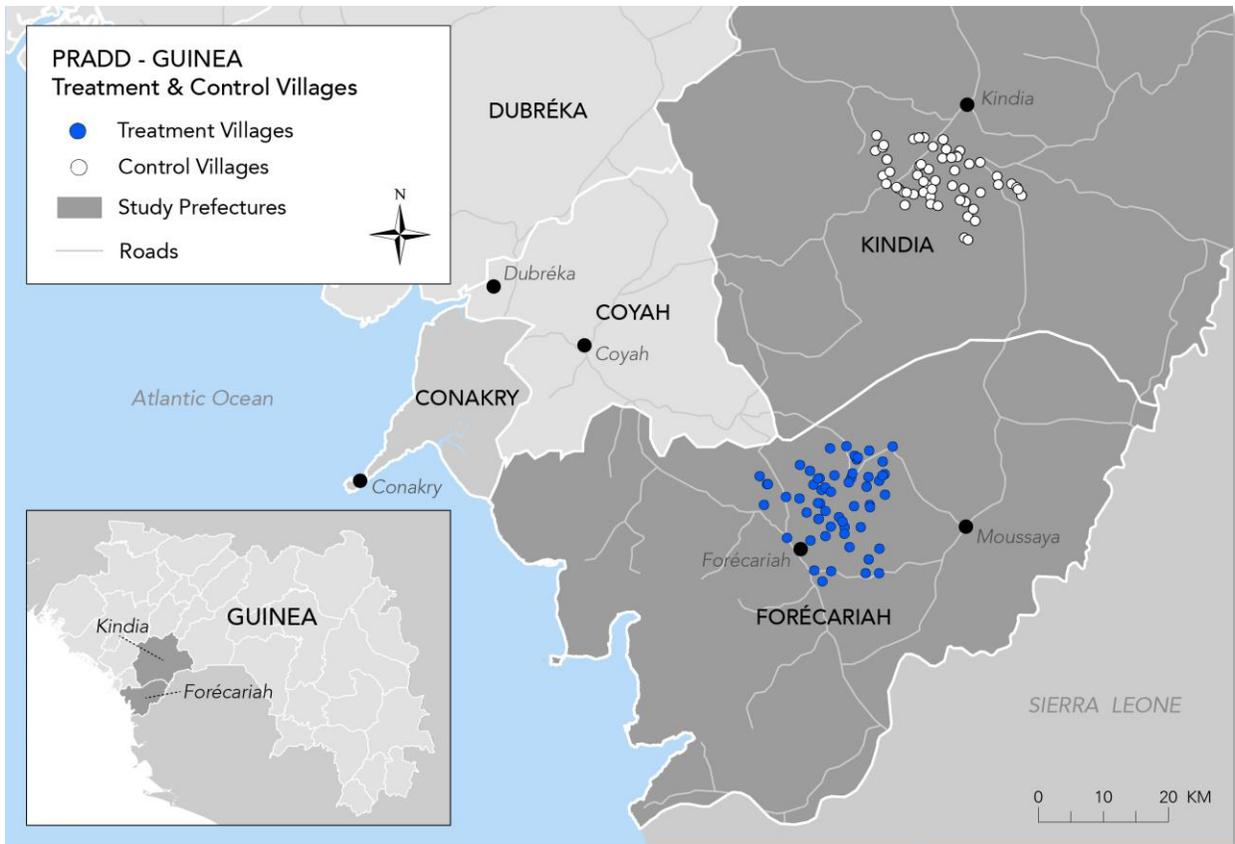


FIGURE 2.3 TREATMENT AND CONTROL AREAS

¹⁴ Discussions of DD limitations in the literature include: endogeneity of interventions (Besley and Case 2000); isolation of specific behavioral parameters (Heckman 2000, Blundell and MaCurdy 1999); linearity assumption (Athey and Imbens 2002); and large standard errors (Bertrand et al. 2004).

artisanal mining sites in Kindia to serve as control areas for the IE. The team relied heavily on a 2012 geological study of Guinea’s diamond production potential conducted in Forécariah, Kindia, and Macenta (Chirico et al. 2012).

The original list of control sites included several potential sites in Coyah and Telimele prefectures. A “Control Site Verification” was conducted by StatView—the data collection partner for the PRADD II IE—which revealed that several of the sites were either inactive or involved mechanized rather than small-scale mining.¹⁵ As such, these sites were considered insufficiently similar to Forécariah and, therefore, were excluded as potential control sites.

Figure 2.3 above illustrates the general location of the mining sites in Forécariah and Kindia. The specific site names and locations include:

EVALUATION MINING SITES

Treatment Areas		Control Areas	
<i>Forécariah Lowland Area/Basfonds</i>	<i>District</i>	<i>Kindia</i>	<i>District</i>
Gberedabon	Bassia	Sitaya	Samoronya
Safoulen	Bassia	Kebeya	Samoronya
Forécariah	Kouriah	Menyima	Foulaya
Kansixoure	Kouriah	Angola	Friguiagbe Gare
Forécariah (Khaliya)	Bokaria	Lambaya	Garayakhori
Seriguekhoure	Bassia Centre	Barrage Kalé	Barrage Kalé
Maliguiyah	Maliguiya Fori	Friguiagbe Gare	Friguiagbe Gare
Bokaria	Bokaria	Goleah	Samoronya
Forécariah	Bokaria	Watiya	Samoronya
Darakhouli	Feindoumodia	Samoreya Pont	Samoronya
Forécariah	Feindoumodia	Khoutouma	Friguiagbe Gare
		Wantamba	Foulaya Cite

SAMPLING METHODOLOGY

Given the small number of available mining sites and associated villages, data was collected in all villages surrounding the treatment and control mining sites listed above. The household survey is a Large N survey involving 2,165 respondents. Lists of villages in the area and population estimates were collected from Guinea’s Central Statistics Office, and control villages were matched by population estimates to treatment villages. The total number of villages for the study is approximately 100 across the entire study area. Within each village, the goal was to survey the head of household from 20 households. Households were selected for sampling in each village using random number tables, and large villages were oversampled to compensate for villages with less than 20 households. The evaluation seeks to assess differential treatment effects for women and men by including as many female household heads in the survey as possible, but the sample was not stratified by any categories during this data collection due to the small populations of study communities and the fact that randomization was done by hand (instead of electronically).

The artisanal miner survey is a Large N survey involving 916 respondents. ASM miners in Guinea are a challenging population to efficiently survey due to the transient nature of their work. Miners were

¹⁵ These other nonviable sites include: Kenenday (Forécariah—Coyah Region), Kenenday North (Forécariah—Coyah Region), Bouramaya (Forécariah—Coyah Region), Ferekoure (Kindia—Telimele Region), and Teme (Kindia—Telimele Region).

surveyed at active mining sites in the study area at the beginning of the mining season. By conducting surveys at the mines during times when miners could reasonably be expected to be amenable to participation, the research team believes that inferences about the larger group can be made without a comprehensive survey of the population. However, because of the use of convenience sampling and the resultant lack of an underlying sampling distribution, this data source will be treated as a qualitative data source for the evaluation.

BASELINE DATA COLLECTION

Baseline data collection was conducted over 60 days by StatView, a data collection firm based in Conakry. Data collection occurred during the West African Ebola outbreak of 2014, a major and unforeseen event that introduced unanticipated challenges into the baseline data collection effort. Although the study area was not directly affected, the outbreak had a significant impact on the logistics and implementation of the baseline data collection. In particular, the original plans for cloud-based mobile data collection were not feasible, because Cloudburst staff was unable to travel to Conakry to train the survey firm on electronic data collection. Due to these circumstances, paper surveys were used as a next-best alternative for the data collection. These and other challenges and their ramifications for the IE are further outlined in the following section.

Three field managers, 5 supervisors, 15 enumerators, and 5 qualitative enumerators were trained for a two-week period on the household survey, CLO survey, artisanal mining survey, and plantation survey, as well as the focus group discussion instruments and sampling techniques. Enumerators also received training from PRADD on an overview of diamond mining and the Kimberly Process. Training also included various health and safety modules to help the enumerators navigate the Ebola outbreak.

A number of checks were put in place to ensure data quality. Enumerators were spot checked three times a week by their supervisors and evaluated on their adherence to protocol and interviewing technique. All paper surveys were reviewed by supervisors for missing data and inconsistencies. Furthermore, 15% of surveys were audited by the field manager on the same day the original survey took place, and discrepancies were addressed in the field.

Data entry took place in Conakry after data collection concluded. Paper-based surveying has a high risk of errors during the data entry process. To minimize this risk, 100% of surveys were double-entered and reconciled by StatView using SPSS. As an additional precaution, data entry templates were created in CPro and Enketo. These templates included the same types of logic checks used in electronic programming, and are therefore less prone to errors than data entry done directly into a spreadsheet.

Despite the steps taken during data collection and entry, surveying on paper did still lead to a widespread problem with missing data in the household survey. The main way that electronic data collection minimizes missing data is that the enumerator cannot continue onto subsequent questions until a response has been entered, whereas on paper enumerators can choose to skip a question. Information can also be lost during the data entry phase. This issue and potential implications for endline are discussed further in the following section.

Focus group discussions took place in 18 communities with three subgroups of interests: Youth, women, and elders. Participants in FGDs were identified with help from the CLO and other village leaders.

Discussions were recorded with digital audio recorders and transcribed word-for-word into French and English before being shared with the research team.

CHALLENGES ENCOUNTERED

Guinea was the epicenter of the 2014 Ebola virus outbreak in West Africa, as the first cases of the disease were detected there in March 2014. In August 2014, after numbers of new Ebola infections rose sharply each week throughout the summer, the country declared a national health emergency.¹⁶ Schools and universities would remain closed until January 2015, when the number of new cases each week finally began to decline.¹⁷ Because baseline data collection took place during this regional state of emergency, the 2014 Ebola outbreak in Guinea dramatically shaped the implementation of the baseline data collection, requiring several changes to the implementation plan as detailed below. The challenges that Ebola imposed on the survey firm ultimately had some impact on data quality, although the impacts to quality are relatively even across all surveyed areas. Survey conditions will likely be vastly different at endline data collection. The research team will continue to monitor the presence of Ebola in Forécariah and Kindia to monitor for potential differential impacts across treatment and control communities. The IE pre-analysis plan (forthcoming) will seek to identify outcomes and mechanisms that may trend differently because of the prefectures' different experiences with the virus. In addition to the numerous Ebola related challenges, the survey had a lower-than-anticipated number of female respondents.

NO ON-SITE COORDINATION OR TRAINING

Due to health and safety concerns and international travel bans to and from the region, the Impact Evaluation Specialist and Country Coordinator at Cloudburst were unable to travel to Conakry to coordinate with and train the survey firm. Instead, all coordination was conducted over Skype and e-mail, and training materials were shared electronically. The PRADD II project team also assisted with training locally.

PAPER DATA COLLECTION AND DATA ENTRY

Without the ability to train the survey firm on electronic data collection and provide support in setting up the devices, baseline data collection had to be done using paper surveys, and the data entered using CSpro and Enketo templates. Paper data collection and entry pose a different set of challenges than electronic data entry. Paper surveys are more prone to errors than electronic surveys, and need careful review in the field to check for consistency and completeness. Despite the safeguards put into place, missing household survey data is a problem in the baseline dataset. Generally missing data represents less than 1% of observations for a given variable, but for some variables this figure rises to close to 10% of observations. Some of these variables with high non-response rates may be used in endline analysis, such as potentially sensitive questions about satisfaction with current systems of land governance, so this issue will require attention going forward.

¹⁶ <http://ebolaresponse.un.org/guinea>

¹⁷ <http://www.usatoday.com/story/news/world/2015/01/21/ebola-west-africa-outbreak/22100563/>

HEALTH THREATS TO THE SURVEY TEAM

The health and safety of the surveying team was a top priority while surveying. Ebola did not spread to the survey sites, and teams were instructed to never enter a village where the presence of Ebola was suspected. As additional precautions, the team received numerous training sessions about Ebola and how to prevent contracting the disease by numerous doctors and public health specialists. StatView was in frequent communication with the chief of the Ebola statistics unit and other public health officials to monitor the spread of the disease.

SAFETY THREATS TO THE SURVEY TEAM

The biggest threat to the survey team during this period of widespread uncertainty was from communities who were not impacted by Ebola becoming hostile to outsiders. Teams were chased from two treatment communities in Fossy and Simitia because of concerns that they could bring Ebola to the communities; rocks were thrown at the team vehicles. Communities were extremely hostile to any Ebola sensitization measures, and it was difficult to convince authorities that data collection was in no way related to the outbreak. For example, in Bokaria the teams were asked to submit their luggage for inspection. Community leaders listened to their late-night conversations to ensure the teams were not talking about Ebola. To increase community awareness of the survey and decrease hostility, PRADD II provided community introductions, due to the fear of Ebola health workers. This was an important step for ensuring the safety of the enumerators and field team. The PRADD II team also launched a radio campaign in the survey areas to explain the data collection exercise before the survey teams arrived in a community.

FEW FEMALE-HEADED HOUSEHOLDS

The number of female-headed households that participated in surveys fell below the target of 20% of households. The low percentage of participation of female-headed households—only 5% of households surveyed—is not surprising, however, given the cultural context of rural Guinea. Due to traditional rules and customs, women may only speak on behalf of the family if:

1. She is living with her husband away from her husband's family, and there is no other adult (like her husband's brother) available.
2. She is widowed and living away from her late husband's family.
3. The husband has migrated and the wife and other household members are living separately and the wife is in control of the household.

Otherwise, the woman must obtain permission from her husband or male relative to speak to enumerators.

Though they were not focused on female heads of household, other nationwide surveys in Guinea have found similarly low percentages of female respondents, and even in areas with high rates of migration, it is unusual for a survey to obtain more than 15% of respondents be female without employing extreme sampling strategies.

SAMPLE CHARACTERISTICS

HOUSEHOLD SURVEY

The sample for the household survey included 2,165 households. The sample is disaggregated by subgroup in Table 2.1.

TABLE 2.1. NUMBER OF HOUSEHOLDS BY SUBGROUP

All	Treatment Status		Gender of Household Head		Age Group of Household Head		Socioeconomic Status	
	Treat	Control	Female	Male	<36	>=36	Poor ¹⁸	Other
2165 (100%)	1083 (50%)	1082 (50%)	115 (5%)	2050(95%)	611(28%)	1544(71%)	544(25%)	1621(75%)

Household sample characteristics are summarized in Table 2.2, below. In terms of ethnicity, household heads in Forécariah and Kindia largely identify as Soussou (83%), and the second largest ethnic group is Peuhl (7%). Small percentages of household heads identify as Kissi (2%), Malinke (4%), Diakanke (<1%), Kouranko (<1%), Temine (<1%) and Toma (<1%). Almost all households (98%) identify as Muslim.

Eighty three percent of household heads were born in the village where they currently live (N=1,723). Of those not from their village of residence (17%, N=356), 95% (N=328) are from another town in Guinea and 5% (N=16) are from another country. Most non-Guinean household heads are from Sierra Leone (N=12).

The average age of household head is 47 years (sd=16). Female household heads are older than male household heads, with an average age of nearly 50 years (sd=14). With an average age of 46 (sd=16), treatment household heads were slightly younger than household heads in the control group, who had an average age of 49 (sd=15).

The overall mean number of household members—defined as people who eat from the same pot—is 6 (sd=2.4).

In 51% of households (N=1,110), adults have no formal schooling. Only 9% of households (N=196) have a member who has graduated high school. The treatment group also shows lower levels of education, with 57% of treatment households (N=616) reporting no members with formal schooling and only 5% reporting a member who has completed high school (N=53), compared to 41% (N=442) and 13% (N=143) of adults in the control group, respectively. Only 41% of households (N=890) can afford to send all of their children to school. Households in the treatment area experience more financial stress in paying for education, as the percentage of households who can afford to send all children to school drops to 29% in the treatment area (N=311).

¹⁸ This index was calculated from household assets and dwelling roof material using principal components analysis.

TABLE 2.2. HOUSEHOLD SAMPLE CHARACTERISTICS

	All	Treatment Status		Gender of Household Head		Age Group of Household Head		Socioeconomic Status	
		Treat	Control	Female	Male	<36	>=36	Poor	Other
Average Household Size	6	5	6	5	6	5	6	5	6
Average Age of Household Head	47	46	49	49	47	30	54	46	48
Locally Born Household Heads	1726 (83%)	905 (84%)	821 (82%)	55 (57%)	1671 (84%)	509 (86%)	1217 (82%)	439 (84%)	1287 (83%)
Household Heads With No Education	1110 (51%)	616 (57%)	442 (41%)	68 (59%)	1042 (51%)	285 (47%)	825 (53%)	305 (56%)	748 (46%)
Households Who Can Afford to Send All Children to School	890 (43%)	311 (31%)	579 (54%)	43 (39%)	847 (43%)	256 (44%)	634 (43%)	201 (40%)	689 (44%)

Interestingly, only 50% of female heads of household (N=58) are divorced or widowed, which is a lower percentage than the research team expected. It is likely that the female heads of household who are married (41%, N=47) are women who set up households with children from other unions and who have sufficient social and financial capital so that their husbands now are farming land that they have accessed through their wives. This could be inherited land from a deceased husband or from the woman's natal family.

ARTISANAL AND SMALL-SCALE MINER SURVEY

In total, 916 respondents were included in the separate survey of miners. Miners surveyed are overwhelming male (98%, N=893). Interestingly, the women included in the ASM survey have not only worked as support staff at the mines (4), but also as Masters (9), Washers (4), a Surveillant (1) and a Digger (1). The type of work performed by most workers in ASM in the study area is depicted in Figure 2.4 (below).



PHOTO CREDIT: MOUSTAFA CHEATELI

FIGURE 2.4. GROUP OF MINERS

Miners are generally married (73%, N=654) and have an average age of 37 (sd=13). Soussou is the most common language (77%, N=709), but it is more common in control sites (91%, N=344) than treatment sites (68%, N=365). Poular is the second most common language (10%, N=87), and is the main language for 13% of treatment respondents (N=68) and 5% of control respondents (N=19). The observed differences in languages spoken between treatment and control prefectures could be attributable to the greater presence in Forécariah of miners from other villages and from Sierra Leone.

Sixty-nine percent (N=622) of miners live close enough to their family to easily visit them. However, miners in the control area are 45% more likely than miners in the treatment area to live close to their families (90% N=331 versus 55% N=291). This is unsurprising, since miners in the treatment area are more likely to work in mines that are not in the village where they were born (73%, N=390 versus 25%, N=94), and are more likely to be born outside of Guinea entirely (13%, N=50 versus 7%, N=7).¹⁹

Over half of all respondents have completed no formal education (52%, N=472).²⁰ Of those who have been to school, education levels are similar in both treatment and control groups. However, miners in the control area are more likely to report being literate (42%, N=161) than miners in the treatment area (33%, N=175).

CUSTOMARY LANDOWNER SURVEY

In a separate survey, 108 CLOs were asked about community-level land practices in their villages.

CLOs are male (N=105), older than the household respondents on average (68, sd=18), and 89% (N=96) belong to the Soussou ethnic group. All CLO's interviewed are Muslim (100%, N=107), and most have iron roofing sheets (89%, N=96) as opposed to grass thatched roofs (11%, N=12). Nearly three-quarters of CLOs report being able to read a newspaper in French (71%, N=75), despite 90% (N=97) of CLOs having no formal education. It is possible that this disparity is attributable to variation in the complexity of newspaper prose or over-estimation by respondents of their comfort level reading in French. It is also possible that older respondents who experienced the socialist period in Guinea might have received village-level literacy training but no formal education.

Of the 108 villages surveyed, 61 were founded over 100 years ago (56%). Numbers of households within the village vary greatly, from a single household to 800 households, though most villages are made up of 15 households or less (56%, N=50), and another 35% (N=31) have between 16 and 49 households. On average, villages are located 2.9 km (sd=2.6) from a primary school and 6.5 km (sd=6.3) from a health clinic. Mobile service is available about half a kilometer (0.49, sd=1.6) away from the center of the village. Tarmac roads are 12.6 km (sd=9.9) away on average. Mean village statistics are presented below in Table 2.3.

TABLE 2.3. VILLAGE STATISTICS

	All	Treatment	Control
Average Est. Age of Village (years)	156	170	142
Average Est. Number of Houses	102	122	87
Average Est. Distance to Primary School (km)	2.9	3.3	2.7
Average Est. Distance to Health Center (km)	6.5	5.7	7.3
Average Est. Distance from Mobile Service (km)	0.49	0.98	0.09
Average Est. Distance to Tarmac Road (km)	12.6	17.2	8.6
Average Est. Distance to Market (km)	8.4	8.9	8.1

¹⁹ Miners who do not live in close proximity to their family still talk to their families frequently, and 39% (N=112) see or talk to a member of their family at least once a week, and another 30% (N=85) see or talk to their family at least once a month. Only 9% (N=25) never or hardly ever speak to their families. However, 41% (N=112) of miners, and 44% (N=102) of miners in treatment areas have spent 6 months or more away from their families.

²⁰ Fourteen percent of respondents (N=131) completed grades 6, 7, or 8, and the most common level of education completed is grade 6 (7%, N=63). Another 13% of miners (N=117) completed at least some secondary school (grades 9–12), and <1% (N=20) have some type of higher education or technical certificate. 12% of miners (N=107) finished only some primary school (grades 1–5).

PLANTATION SURVEY

Finally, 324 self-identified plantation owners²¹ were interviewed about their tree planting activities to better understand how plantation agriculture fits within the other main livelihood activities in the area—subsistence agriculture and artisanal mining.

The plantation owners are overwhelmingly male²² (98%, N=317) and belong to the Soussou ethnic group (94%, N=306). The average age of plantation owners is 49 years old. Three-quarters of the plantation owners have no formal education (76%, N=247).²³ Ninety-two percent of plantation owners were born in the same village where their plantation is located.

21 There appears to be some fluidity in identity between subsistence and plantation farmers, since many residents aspire to one day run a plantation, i.e. produce a surplus of fruit to sell at market. As such, the data collection firm relied on farmers to self-select into this category.

22 Enumerators were instructed to interview a spouse if the household head was not available. Due to the dearth of questions relating to demographic characteristics in this survey, it cannot be determined whether the six women interviewed are self-identified plantation owners or spouses of male plantation owners.

23 The remaining quarter are split between primary education (6%, N=19), middle school education (5%, N=16), and secondary education or higher (8%, N=27).

3.0 FINDINGS—LAND USE & MANAGEMENT

LAND HOLDINGS

Data from the household survey shows that 98% of households farm at least one plot of farmland, and most households have one (39%, N=838) or two plots (38%, N=813). On average, households in the control area have more plots than households in the treatment area (2.2 sd=1.0 versus 1.7 sd=0.9). Most land belonging to households in the study area is inherited (72%, N=2,994). A smaller percentage of plots are acquired through borrowing (20%, N=810), renting (7%, N=300), or purchasing land (1%, N=27).²⁴ From the separate plantation owner survey, almost all plantation owners (91%, N=294) inherited their land, and another 5% (N=17) borrow the land at no cost.

HOUSEHOLD LAND USE

Farming of rice, fruit and vegetables is the dominant activity in the study area, as 62% of household members older than 13 years (N=4,171) spend the majority of their time working in rice cultivation and a further 17% (N=1,171) work mainly in smallholder cultivation of subsistence crops. Five percent (N=360) of individuals in surveyed households work in plantation agriculture of palm oil or tree fruit.

Plots are generally flat (70%, N=2,868) and are located an average of 26 minutes away from the household, walking (sd=29.35, N=4,099).²⁵

Perceptions of soil fertility by subgroup at the plot level are presented in Table 3.1. The majority of plots are perceived by respondents to be fertile, and 83% of plots (N=3,405) are believed to have average or better soil fertility, but there are differences between subgroups. Female-headed households farm more plots with poor soil fertility than male-headed households. A fifth of plots held by female-headed households were rated ‘completely infertile’ or ‘below average fertility’ (25%, N=47), as opposed to 17% (N=641) of plots held by male-headed households. Since women are more likely to access land by borrowing from other people, it appears likely they are being given land that is the least valuable to the owner. The treatment plots were rated ‘above average fertility’ or ‘extremely fertile’ at higher rates than control plots, with 76% of treatment plots (N=1,358) and only 55% of control plots (N=1,259) receiving these ratings—but treatment plots are described as ‘infertile’ or ‘very infertile’ at similar rates as control households.

24 On average, households pay 66,275 GNF (sd= 123,267) to borrow land owned by someone from the village, and can borrow land for a maximum of 5 years (sd=8.5). Borrowing land from people outside the village is more expensive than borrowing from households inside the village, averaging 242,924 GNF (sd= 423,932), but it can be borrowed for the same amount of time, a maximum of 5 years (sd=8.48). In both cases, people also occasionally pay with in-kind payments, primarily coco nuts and other crops or food (92%, 58 inside the village; 83%, 43 outside the village).

25 Only 29% of plots (N=1,233) are regarded as ‘hilly’, ‘steep’ or ‘very steep’ by respondents.

TABLE 3.1. SOIL FERTILITY BY SUBGROUP*

	All	Treatment Status		Gender of Household Head		Age Group of Household Head		Socioeconomic Status	
		Treat	Control	Female	Male	<36	>=36	Poor	Other
Completely Infertile	453 (11%)	171 (10%)	282 (12%)	36 (17%)	417 (11%)	118 (11%)	335 (11%)	111 (12%)	342 (11%)
Below Average	239 (6%)	83 (5%)	156 (7%)	11 (5%)	228 (6%)	65 (6%)	174 (6%)	83 (9%)	156 (5%)
Average	788 (19%)	178 (10%)	610 (26%)	44 (20%)	744 (19%)	200 (18%)	588 (20%)	169 (18%)	619 (20%)
Above Average	1024 (25%)	317 (18%)	707 (31%)	55 (25%)	969 (25%)	271 (24%)	753 (25%)	258 (27%)	766 (24%)
Extremely Fertile	1593 (39%)	1041 (58%)	552 (24%)	70 (32%)	1523 (39%)	464 (42%)	1129 (38%)	338 (35%)	1255 (40%)
Total Observation Number	4139	1790	2307	216	3881	1118	2979	959	3138

*Plot level data

Land is generally perceived by household and CLO survey respondents as abundant. The average village size is 9,726 ha (sd=81,319), only 922 ha (sd=5,949) of which are allocated land. An additional 2,388 ha (sd=8,325) is unallocated land, on average, and 3,317 ha (sd=11,464) is land that is suitable for crop production. Almost all CLOs (95%, N=102) report that households in their village could obtain additional land for crop production. However, when CLOs were asked to evaluate what percentage of households struggled to produce enough food for basic household needs for a number of reasons, 27% (N=29) reported that households lack land. Labor and inputs are generally perceived to be the largest limiting factors for increasing agricultural yield. Half (50%, N=54) of CLOs reported at least some of the households in their village struggle to have enough inputs. Another 41% (N=44) of CLO's report at least some of the households in their village lack labor to produce enough food.

One interesting manifestation of this phenomenon is described by Mike McGovern in his PRADD II trip report. He found that women in some villages can receive rice fields of their own for cultivation, but they must hire manual laborers to clear the field. He reported that women would “sow, weed, and harvest either by herself, as a member of a work group that provides labor on each member's farm, or by further payment for work groups to come to her field,” (USAID 2014c, 10). Women interviewed also said that they were limited by the cost of paying men to do the hard manual labor of felling trees and clearing brush.

CROPS

Rice is the staple crop in Guinea, and it is monocropped on 29% of all plots (N=1,085). This is likely swamp or plains rice, as upland rice is generally intercropped with okra, eggplant, millet, corn, and beans. Three quarters of households have one or more plots used for rice cultivation (77%, N=1,642), at least in part. Most households dedicate one plot to rice production (67%, N=1,444). Table 3.2 below outlines the proportion of rice plots by subgroup.

TABLE 3.2. RICE PLOTS BY SUBGROUP*

	All	Treatment Status		Gender of Household Head		Age Group of Household Head		Socioeconomic Status	
		Treat	Control	Female	Male	<36	>=36	Poor	Other
Other Plots	2078 (53%)	576 (33%)	1502 (67%)	149 (71%)	1929 (51%)	540 (50%)	1538 (54%)	411 (44%)	1667 (55%)
Rice Plots	1879 (47%)	1145 (67%)	734 (33%)	60 (29%)	1819 (49%)	545 (50%)	1334 (46%)	519 (56%)	1360 (45%)
Total Observation Number	3957	1721	2236	209	3748	1085	2872	930	3027

*Plot level data

The other key crop category is vegetables and beans (26%, N=952). Other African staples such as maize, cassava, millet, and fonio are less common. Rice is planted alone or in combination with other crops on a lower proportion of plots farmed by female-headed households, as only 28% of plots farmed by female-headed households (N=60) are planted with rice, compared to 48% of plots used by male-headed households (N=1,819). Accordingly, female-headed households plant vegetables at a higher rate than male-headed households (44% N=88 versus 40% N=1,478 of plots in these groups, respectively). This could be the case because female-headed plant home gardens instead of field plots at higher rates than male-headed households because they do not require any male labor. Plots in the treatment area are far more likely to be planted with rice than plots in the control area (67% N=1,145 versus 33% N=734).²⁶

About a third of all plots are planted with fruit-bearing trees (34%, N=1,265), but 45% of households (N=973) have at least one plot with trees. There are differences across gender and age of head of household, and treatment and control groups with respect to the decision to cultivate trees on a plot. Female- and youth-headed households cultivate fruit trees on their plots of land at lower rates—31% for female-headed (N=61) and 30% for youth-headed households (N=300). The lower occurrence of tree planting by women may be due to gendered norms in the division of agricultural labor, since women rarely plant trees in the forest region of Guinea. Planting trees also usually gives the owner of the trees de facto ownership of the land on which they are cultivated, even though in principle the land still belongs to the CLO lineage head. Additionally, fruit trees are more common in the control area, where they are planted on 45% of fields (N=915), as opposed to 21% of plots (N=350) in treatment areas. All tree plantings by subgroup are displayed in Table 3.3.

²⁶ Significant differences between treatment and control groups in terms of other key crops include: cassava (9% of control plots, 2% of treatment plots), corn (4% of control plots, <0.5% of treatment plots) and vegetables (34% of control plots, 15% of treatment plots).

TABLE 3.3 TREE PLANTINGS BY SUBGROUP*

	All	Treatment Status		Gender of Household Head		Age Group of Household Head		Socioeconomic Status	
		Treat	Control	Female	Male	<36	>=36	Poor	Other
No Fruit Trees	2479 (66%)	1350 (79%)	1129 (55%)	138 (69%)	2341 (66%)	714 (70%)	1765 (65%)	613 (69%)	1866 (65%)
Fruit Trees	1265 (34%)	350 (21%)	915 (45%)	62 (31%)	1203 (34%)	300 (30%)	965 (35%)	277 (31%)	988 (35%)
Total Observation Number	3744	1700	2044	191	3553	1010	2724	890	2854

*Plot level data

The most common type of fruit trees farmed by plantation owners are mango trees, grown by 72% (N=232) of respondents, followed by palm oil trees (63%, N=205), cola trees (55%, N=178), and orange trees (54%, N=176). Banana trees (52%, N=169) and avocado trees (48%, N=156) are also common. Mangos are commonly grown alone, whereas banana and oil palm are frequently grown in combination with other trees.

There appears to be some fluidity in the definition of *plantation* in these areas, as self-identified plantation owners did not always grow fruit for market. From the separate survey of self-identified plantation owners, it appears that most plantation owners spend the majority of their time engaged in rice cultivation (63%, N=205). Indeed, the PRADD II Trip Report notes that respondents were interviewed who have a small stand of trees that they would like to turn into a plantation, but their capacity to invest the necessary time, effort and money to achieve this goal remains a question (USAID, 2014c). There is great desire to restore the higher level of plantation activity in the area that existed during colonialism and waned during the socialist period, even if an investor wanted to establish a plantation on customary land, which could threaten land tenure and “give *de facto* land rights to the person has planted the perennial trees” (N=11). Furthermore, plantation agriculture seems to have returned in greater force in Kindia than in Forécariah, since the control communities plant fruit trees at a much higher rate than treatment communities.

PLOT ADMINISTRATION AND INVESTMENT

Decisions about what crops are planted, what inputs are used, and what investments are made on household fields are overwhelmingly made by male decision makers. These decisions are made by men for 97% of plots (N=10,514). Of the 311 plots where women participate in decision-making, roughly half (52%, N=162) are farmed by female-headed households. However, decisions about plot management and investment are still made by men in 72% of plots farmed by female-headed households (N=408).

Plot-level investment is low. Only 26% (N=819) of plots are irrigated, and plots farmed by female-headed households are 10% less likely to have irrigated plots of land than male-headed households, likely because they plant less rice (50% N=57 versus 79% N=1,585). There is also a difference between control and treatment groups. Treatment households are 22% more likely to have irrigated plots than the control households. This discrepancy is likely also attributable to greater prevalence of planting rice in the treatment area than in the control area (96% N=1,001 versus 59% N=641). Fencing is even less

common than irrigation. Only 47 (2%) plots are fenced, and this number is similar across all types of households. The main motivation for building fences is to 'keep animals out' (N=37) rather than 'define boundaries' (N=7). Mechanized farming is rare, and only 4% of plots (N=166) were prepared, sowed, or harvested with the assistance of a borrowed tractor.

Fertilizer is applied to less than half of plots in the sample. In the past season, 43% (N=1,745) of plots were applied with fertilizer, and this number is the same between male and female-headed households. Poor households and youth-headed households use fertilizer at slightly lower rates—40% and 39% of plots have been applied with fertilizer, respectively. However, the largest difference in fertilization rates statistically and substantively is between treatment and control communities. Only 6% of plots (N=110) in treatment communities have been applied with fertilizer, compared to 71% of plots (N=1,635) in control communities. Most households who use fertilizer do so on one (41%, N=381) or two (38%, N=358) plots.

4.0 FINDINGS—CUSTOMARY TENURE

LAND GOVERNANCE

Findings from the household survey suggest that land management in the study area is primarily the domain of village elders (commonly referred to as “wise ones” or “sages”) and customary officials, while the formal judicial process, police and courts, play a near-nonexistent role in land management. Illustrating this point, households cited village elders as the most likely to punish rule-breakers (29%, N=625). Furthermore 52% (N=1,073) of households stated they would turn to village elders for help if their farmland was encroached upon (52%, N=1,073), whereas 21% (N=442) reported they would go to the district for help if their land were being encroached. CLOs are the second most likely to punish rule-breakers (28%, N=604), and the third most likely source households turn to for help in case of encroachment (18%, N=366).

Nearly all respondents (98%, N=2,100) ‘agree’ or ‘strongly agree’ that their community land rules are fair. However, there are differences in how various groups perceive the rules. Treatment households are 14% less likely to say they ‘strongly agree’ that rules are fair compared to control households, youth households are 7% less likely to say they ‘strongly agree’ that rules are fair compared to non-youth households, and poor households are 5% less likely to say they ‘strongly agree’ that rules are fair compared to other households. There was no difference in response to this question between female- and male-headed households, though the small number of female-headed households makes complete confidence in these comparative results difficult. Similarly high numbers of respondents ‘agree’ or ‘strongly agree’ that their community rules about land use and management are clear and well-known (97%, N=1,922). These numbers are similar across genders and ages of household head and across socioeconomic statuses.

The CLOs also report households have a good understanding of rules. Most (84%, N=56) of CLOs report households understand rules about grazing ‘very well’, and 83% (N=59) report households understand rules about neighboring village use of customary land. Rules about investors are slightly less well understood—only 69% (N=27) of CLOs believe the rules are ‘very well’ understood. In addition, analysis of the qualitative data suggests that FGD participants believe community land use rules are fair, respected, and well-known. For example, women in Forécariah said, “There has never been a bad regulation relative to the management of lands which made things difficult in the village. Rules have never been broken.”

CLOs were asked about rules governing four specific types of land management activities including grazing livestock, use of the village’s customary land by neighboring villages, use of the village’s customary land by outsiders or investors, and fencing. According to the CLOs surveyed, villages are most likely to have rules about the use of customary land by neighboring villages (66%, N=71), followed closely by rules about grazing land (64%, N=69). Just two villages have rules about fencing (2%), and 41 villages have rules about outsider or investor use of customary land (38%). Many more villages have

rules about outsider activity than have an investor actually present. Only four CLO's reported current investor activity, which is discussed in further detail in the "Investor Relations" findings section.

Nearly all villages monitored for rule breaking for all four types of activities. The highest rate of monitoring occurs for rules regarding investors (100%, N=41), but neighbor's land use (96%, 68) and grazing (90%, N=62) are not far behind. Only two CLOs reported community rules about fencing. No activity had a large numbers of rule violations. In the past year, rules about grazing were broken most often, an average of one instance (1.2, sd=2.7), followed by neighboring village's use of customary land (0.36, sd=1.1), then investor use of customary land (0.11, sd=.47).

The majority of villages also have penalties for breaking rules. All (100%, N=41) villages that have rules about investors have penalties if the rule is broken, and 86% (N=59) of villages with rules about grazing have penalties, as do 85% (N=60) of villages with rules about use of customary land by neighboring villages and both villages with rules about fencing. These penalties are primarily decided by the CLOs and village elders, followed by district council and district heads. Villages as a whole, and village committees, are rarely involved in rulemaking.

Only a small percentage of local governments collect fees or fines from outsider's use of community land, such as mining or farming. Of the 5% of respondents (N=115) who reported such fees were collected, 77% (N=93) are not aware of how this money is spent, and 78% (N=93) did not believe the money is spent in ways that benefit the needs of everyone in their community.

Findings from the household data suggest that punishments for land management violations are generally levied consistently. If a community member was caught mining from a pit that did not belong to him or her, almost 90% of respondents (88%, N=1883) report that the offender would likely be punished. However, respondents' confidence in the likelihood of punishment does differ along socio-economic status. Poor households are 10% less likely than other households to say it is 'very likely' the offender would be punished (67% N=357 versus 77% N=1,239).

Despite high percentages of villages having established penalties for rule violations, compliance with these penalties is low. More than half (60%, 36) of CLOs report that 'offenders never comply' with penalties about neighbor's use of customary land, and 56% (N=33) report offenders never comply with rules about grazing. Outsiders and investors have a slightly higher compliance rate, but 45% (N=18) of CLOs still report that outsiders and investors never comply.

COMMUNITY INVOLVEMENT

Information about the frequency of community meetings is inconsistent at baseline. The community meetings commonly cited in the qualitative data suggest that, while land-related decision making in the study area is predominately the responsibility of village elders, meetings are held by village elders to gather the opinions of villagers on issues relating to land, and to reach consensus on land-related decisions. For example, youth in Kindia explain, "In the community, everybody attends the meetings of the wise ones²⁷. We discuss with them before the decision-making... Our wise ones never make decisions without contacting [the] women and young people. Following to this a consensus decision is made... In our community, all the women participate to the decision-making concerning the village

²⁷ For the purpose of the analysis, the use of the terms "wise ones" and "sages" are interpreted as referring to village elders.

resources and the land management... Young people are always involved in order to better assure the continuation. We are always informed about any decision made by [the] wise ones; that's why we follow them." Youth in Kindia further explain, "Before taking any decision about the land, the views of young people and women [are] collected by the sages at a meeting held for that purpose... When such a situation occurs in the community, the sages summon everyone. For example, young people and women are represented by their respective presidents. The opportunity is utilized to inform and educate everyone." However, the household survey findings do not support the focus group findings. In the communities referenced above, no household survey respondents in the first community reported a community meeting taking place in the last year, and only two respondents in the second community affirmed that meetings had occurred.

Overall, the household survey data suggests that the land-related meetings commonly mentioned in the FGDs as a part of the land-related decision-making process are uncommon in both Forécariah and Kindia. Only 11% of respondents (N=227) report a single meeting in the past year about land rights, land allocation, land conflict, or the resolution of land disputes. Youth and poor households report even lower instances of land-related meetings. Only 8% of youth-headed households (N=55) and 7% of poor households (N=36) say a land meeting was held in their village. When meetings are held, attendance is high. 92% of respondents whose communities held meetings (N=98) attended at least a few times, and 51% (N=54) always attend land related meetings. These numbers are similar across all genders, ages, and socioeconomic statuses. Just over a quarter of CLOs report that there has been at least one meeting about land use or land management in their village in the past year (N=29), and in villages where meetings have taken place, villages average 2.5 meetings per year (sd=2.08).

This discontinuity could be attributable to social desirability bias in the focus groups, or perhaps elders were present during the group discussions or respondents believed that their answers would travel back to their leaders through word of mouth. It is also possible local cultural forces produced a situation where the qualitative data is slanted toward giving the appearance of consensus. Other ethnography in Guinea points in the same direction, namely that when speaking to people from outside their communities, villagers are more likely to portray their internal relations as both consensual and more-or-less unanimous. During his field visit, Mike McGovern notes that he also was initially presented a "standard" account of full consultation and consensus, but later heard complaints that in exchange for a young wife, the customary land owner had allowed Fulbe pastoralists to graze their cattle on village land, damaging some peoples farms and orchards. The Ebola outbreak may have pushed villages further in this direction if they were trying to demonstrate competence and solidarity in the face of a national government that they perceived to be intrusive.

LAND ALLOCATION AND TRANSFER

Respondents recognize village elders and CLOs as the most important actors in the process of land allocation and controlling access to land by outsiders. In nearly every FGD, participants explained that outsiders wishing to acquire land first approach village elders and local authorities, who in turn go to the village landowners. Among FGD participants, the traditional process of 'tying colas' and presenting them to village authorities was mentioned as a part of the process of land allocation in nearly every group. Transcripts reveal that in almost all of the villages where discussion took place, outsiders wishing to acquire land in the village approach either the village elders or CLOs with 'the traditional tie of cola nuts'.

Illustrating this theme, adults in Kindia (referring to the village elders here as ‘sages’) describe, “At [village], a foreigner have to give the traditional cola nut to the sages before exploit[ing] that farmlands...When a stranger comes to acquire a land in [village], we ask him [for] the 4 traditional cola nut for [the] wise ones. We do not sell land at our home; we lend it...Whoever wishes to settle by us, must give the 4 traditional cola nuts which will serve the price of the lands. And all the community will be informed.” Furthermore, women in Forécariah said, “To have access to our lands, you must make cola nuts attachment²⁸ for [the] wise ones. Following this procedure, [the] wise ones will examine the demand in order to give an answer on the cola nuts attachment, you must add [a] symbolic amount.”

Since CLOs are the primary means of acquiring land in villages, their assessments of the relative value of different land uses can drive land use practices for their village. CLOs were asked how they would prioritize five land uses in allocating land, from ‘most likely to reallocate land’ (N=1) to ‘least likely to reallocate land’ (N=5). Agricultural uses were the most important priority for the CLOs, with an average of about two on the scale (1.8, sd=1.4), followed by plantations (2.7, sd=1.3). Surprisingly, mining was the least desirable land activity overall (3.5, sd=1.7), even more so than leaving the land fallow (3.1, sd=1.3) or for pasture or other non-agricultural use (3.1, sd=1.5). However, the assessment of the desirability of allocation of land for mining was bimodal: while 49% of CLOs (N=53) said it was very unlikely that they would allocate land to mining, 22% of CLOs (N=24) did indicate that they would be very likely to allocate land for mining purposes. The distribution of these responses is summarized in Table 4.1 below.

TABLE 4.1. LIKELIHOOD OF LAND ALLOCATION

	Agricultural	Mining	Plantations	Non-Agricultural	Fallow
Very Likely	79 (73%)	24 (22%)	17 (16%)	31 (29%)	19 (18%)
Likely	7 (6%)	12 (11%)	49 (45%)	8 (7%)	18 (17%)
Neutral	4 (4%)	11 (10%)	13 (12%)	13 (12%)	33 (31%)
Somewhat Unlikely	3 (3%)	8 (7%)	12 (11%)	36 (33%)	18 (17%)
Very Unlikely	15 (14%)	53 (49%)	17 (16%)	20 (19%)	20 (19%)

Among household survey respondents there is overwhelming approval of current CLO priorities in allocating land. Almost all household survey respondents (N=1,920) ‘strongly agree’ or ‘agree’ that decisions about customary land allocation are fair. There is no difference by gender or age of household head, but poor households were 5% more likely to ‘strongly agree’ that land allocation decisions were fair than were better-off households. Similarly, 98% of households (N=1,795) ‘agree’ or ‘strongly agree’ that decisions about customary land allocation are transparent, though poor households are 5% less likely than other households to state they ‘strongly agree’ that allocation processes are transparent.²⁹

Household survey respondents also report overwhelming confidence in village elders, with 94% (N=2,043) specifying that they have ‘complete’ confidence in them. Subgroup differences were observed between poor and non-poor households with respect to confidence in village elders, with slightly lower rates of complete confidence (91%, N=495) among poor households than the overall rate of 94%. Religious leaders (N=2,001), the District Council (N=1,872) and District Head (N=1,907), and CLOs

²⁸ This was also translated as ‘offering’.

²⁹ However, with 10% of the sample declining to respond, these questions had a higher non response rate than others in this module. It merits further investigation what household characteristics increase the likelihood that a respondent would demur from these questions about land allocation.

(N=1,969) also enjoy very strong confidence, with 86% or more of respondents selecting 'complete confidence'. Poor households also have a slightly lower rate of confidence in CLOs than non-poor households, with 88% (N=477) of respondents reporting complete confidence, as opposed to 92% (N=1,492) for non-poor households.

Throughout FGDs, trust in village elders was given as a common reason behind perceptions of fairness in terms of land management rules and the land allocation process. For example, women in Forécariah said, "We find the process of lands allowance of the village correct and clear, because everyone is associated and we trust our elders." Another group of women in Forécariah said, "We believe community land decisions are fair because we trust the elders and their decision making," while adults in Kindia mentioned, "Land decisions are clear because elders do not make bad decisions." Confidence and trust in village elders was also given as the most common reason why focus group participants felt their community's land could not be taken by outsiders without adequate consultation and compensation.

Qualitative analysis also reveals that the majority of focus groups said that, like other land-related decisions, their entire village is informed of land allowance decisions. For example, a group of adults in Kindia said, "The land allocation process in our village is fair and transparent; because nothing can go on without the involvement of the community. Everybody comes to participate in the negotiation on the allocation of land. Can be girls and boys. Everyone will have the word to say." In the quantitative household survey, two respondents from this village affirmed that community meetings had taken place in the last year, so it is possible that some of this information exchange takes place through informal word of mouth, rather than formal community meetings.

In terms of renting and selling land, according to the CLO survey, customary land can be borrowed by households from the village in 94% of villages (N=101), and borrowed by people from outside the community who invest in the community in 94% (N=101) of villages.

CLO also report that while a variety of governing bodies have the authority to sell customary land, alone or in concert with other authorities³⁰, CLOs are the most common and have authority to sell customary land in 93% of villages (N=100). Village elders have the authority in 34% (N=37) of villages, the District Head has authority in 17% (N=18) of villages, and the District Council has authority in 25% of villages (N=27). The national government only has authority to sell customary land in two villages. Less than 10% of villages have sold customary land to someone outside the village in the past five years (N=10). Land was sold by the CLO in seven cases, and by a non-national in a single instance. In the instances where land was sold, five cases involved land purchased by businesses, and three cases involved land purchased by elites from Conakry. The primary reason land was purchased was agriculture (N=6) and housing (N=4).

³⁰ Respondents were allowed to select multiple responses to this question.

LAND DOCUMENTATION

Throughout the survey area, households report incredibly low levels of any type of land documentation consistently across age and treatment status; 97% of household plots have no documentation (N=3,990). Poor households are slightly less likely to have documentation on their plots (1%, N=9), while female-headed households have documentation for 7% of their plots (N=15), compared to 3% of plots held by male-headed households (N=113). The higher rate of land title among female-headed households could signal that some women (or the men around them, like their sons) understand that land title may be more useful or important to people who are not senior men from lineages with power in a village. However, the small number of plots owned by female-headed households makes it difficult to draw conclusions about the role gender plays in the formal documentation process.

Among villages included in the CLO survey, it was reported that any customary land was converted into titled land in approximately half of the villages (47%, N=51). However, even though the lands were reported as titled, villages often lacked legal documents. In general, those who declared that they have a title are referring to colonial period documents, which they consider as *titre foncier*, or land title. Forécariah was renowned for its plantation of fruits under the colonial regime and lands were almost all legally registered to individuals in this way. Then, these lands were part of “*domaines du contentieux franco-guinéen*”³¹ under the Sekou Toure regime, and finally these lands have belonged to communities since the tenure of late President Lansana Conte. There are also some “official” documents—a kind of attestation from the District and Commune Rural. However, CLO respondents were unable or unwilling to produce documents to show to enumerators.

Among the 3% of households (N=61) that reported formal land documentation for at least one plot, the most common type of documentation is an old *titre foncier* on 88 plots. Some plots with documentation have a *certificat d'achat* (12, purchase certificate)³², and four have a *plan foncier* (land map or land plan), while in 14 cases households do not know what type of documentation the plots have. Many of the households who obtained documentation paid one-time fees on the plot but have not paid recurring taxes (N=53). Households reported paying taxes in the past year on only four plots, and in the past year, only seven respondents were required to show their documentation to anyone.

Plantation owners report similarly low levels of formal land documentation. Out of the 324 plantation owners surveyed, just 6% (N=19) reported documentation for their land—6 plantation owners have a land title, one has a *certificat d'achat*, 6 have a *Plan Foncier*, 3 are not sure what type of documentation they have, one obtained his land through “donation”, and one plantation owner has a “letter of the *Société Guinéenne de Culture* from colonial times”.

Only 7% of household survey respondents (N=138) are aware of Guinea’s Land Code, a set of land tenure regulations that govern state law, though some groups have less information than others. Poor households are 5% less likely to have heard of the Land Code, and youth households are 4% less likely to have heard of the Land Code. Only one female-headed household had knowledge of the Land Code. Of the households who were familiar with the land code, 94% (N=131) correctly identified that obtaining official documentation for property can be done only through the Land Registry, suggesting

31 Areas of Franco-Guinean contestation/disputation

32 In principle this is a formal document, but throughout Africa informal facsimiles have been known to turn up. Most often one or both parties may have been operating in good faith and thought this was the real thing, but the local magistrate only did half of what was necessary to make the sale legal through ignorance or so as to facilitate the ability to pocket the money.

people who are aware of the policy know more about the content of the Land Code than they do either the National Mining Law or the Kimberly Process.

Slightly more CLOs have heard of the Land Code, as only 91% (N=96) of respondents indicated that they have never heard of the Land Code. Only six CLOs indicated that they have some level of familiarity with the land registry process. None of these six respondents have obtained formal or legal certification for the customary land in their village, and none are interested in obtaining formal or legal certification. No reason stands as the main reason CLOs are not obtaining formal or legal certification for customary land—one CLO reported that they do not understand the process, and another claimed not to have enough knowledge about the benefits of documentation.

LAND DISPUTES

Conflicts on plots were reported as incredibly rare, and occurred on only 43 plots (1%) over the last two years. The majority of these conflicts are boundary-related (N=28), followed by land reallocation (N=9) and land rentals (N=6). Conflict occurrences are too rare to detect any meaningful difference between subgroups. Most conflicts that take place involve members of the community (N=23): either family (N=12), the CLO (N=9), or neighbors (N=8). Other actors involved include the District Head (8) the Master of mines (N=4), local government authorities (N=4), investors (N=4), and miners (N=2). Local courts (N=1) are almost never involved, and police are never involved. In addition, conflicts are rarely violent—just one conflict involved violence by either party—and nearly two-thirds of conflicts have been resolved (N=16).

Residents prefer for disputes to be resolved at the level of the household, or barring that, at the level of the village. The qualitative and quantitative data suggests that individuals avoid sending conflicts to the judicial system to the extent possible, because it is viewed as corrupt. Other work also notes that people in the study area tend to believe that the person who will win a case in court is whichever party has paid the biggest bribe (USAID 2014c). The baseline data indicates that most households took their conflicts to traditional authorities, including elders (N=13), the CLO (N=6), and local committees (N=4), but an additional eight conflicts involved local government authorities for resolution. Three quarters of conflicts (N=28) were resolved by the first party that households went to for resolution, and 16 conflicts have been resolved in a way that is satisfactory for the landowner—though just four conflicts were resolved in a way that was perceived to be fair. In FGDs, village elders were mentioned most often as those playing the biggest role in the resolution of land disputes or disputes connected to land-related resources. For example, youth in Kindia explained, “When the basic conflicts or those relative to resources related to the land occur in the village, it is elders and the local authorities who play the most important [role] in the resolution of this conflict.” Adults in Forécariah said, “This is the local authority and the village elders who are involved in conflict resolution.” The clarification of boundaries by village elders was often cited an essential part of their role in dispute resolution.

Eight CLOs report having conflicts in the past year between members of the same household in their village. Villages with conflicts between members of the same household have an average of 1.8 conflicts (sd=1.4) in the preceding year. Conflicts over boundaries are the most common source of conflict (1, sd=1.8), followed by disputes about land allocation (1.1, sd=1.7). None of these conflicts resulted in violence or the destruction of property, and all conflicts have been resolved. Half of the CLOs (N=4)

believe that both the frequency and intensity of conflicts between members of the same household have remained the same, and the remaining four are divided between increasing and decreasing.

A similarly low number of CLOs report conflicts occurring between households in their village (N=7), averaging 1.9 conflicts (sd=1.5) in the past year. Boundary disputes are once again the biggest source of conflict (1, sd=1.8), followed by land allocation (0.71, sd=.95), and conflicts about inheritance (0.29, sd=0.49). All but one conflict have been resolved (0.17, sd=0.41). Six of these seven CLOs report that conflicts between households have either remained the same or decreased compared to three years ago.

Disputes with other villages are the most common type of conflict reported by CLOs. Nearly one in ten CLOs report a dispute with another village (9%, N=10) in the past year, and those who do have one (sd=0) dispute. Like village level conflicts, the most common source of conflicts are around boundaries and land allocation, with averages just under one dispute (0.78, sd=0.44 and 0.6, sd=.52, respectively). Conflicts with other villages also included conflicts over tree cutting (0.11, sd=0.33) and grazing (.1, sd=.32). Some conflicts (0.12, sd=.35) did result in violence or destruction of property, and about half (0.56, sd=.53) of conflicts have been resolved. However, eight of these ten CLOs believe that the intensity of conflicts with other villages have decreased.

WOMEN AND LAND INHERITANCE

Data from the household survey shows that most land belonging to households in the study area is inherited, as 72% of plots (N=2,994) that households own are acquired through inheritance. A smaller percentage of plots are acquired through borrowing (20%, N=810), renting (7%, N=300), or purchasing land (1%, N=27). Male-headed households (74%, N=2,785) inherit their plots at an 11% higher rate than female-headed households (57%, N=209), and in turn, female-headed households are more likely to borrow (N=113), rent (N=33), and purchase land (N=11).

The lower rate of inherited plots among female-headed households can be partially explained by the land inheritance practices in the study area. CLOs were asked about land inheritance practices in their communities in a variety of circumstances. In nearly all cases, children are the most likely to inherit land after either their father or mother passes, bypassing the surviving spouse. When a male head of household dies leaving adult children, the wife is bypassed in all but two villages, instead passing to the oldest adult son (42%, N=45) or any adult child (48%, N=52).³³ In contrast, if a female head of household dies leaving a husband and young children, her husband will inherit the land in 56% (N=46) of communities, and her children will inherit the land in 43% (N=46) of communities.

There is not a consensus about the general practice for a widow to gain access to land after the death of her husband, as respondents during the initial visit to PRADD II sites disagreed about whether a woman would return to her natal village or stay in her husband's village by right, without having to seek permission from her deceased husband's family (USAID 2014c). FGDs further reveal that a woman's access to inherit her late husband's land is largely dependent on whether or not she has children. For

³³ If a male head has subdivided separated rice fields for each wife, when he dies the sons of each wife may claim their separate areas. If a male head dies leaving a wife and young children, the land goes to the children's guardian (22%, N=24), to the oldest adult son (23%, N=25), or directly to the young children (3%, N=3). In another 41% (N=44) of communities the land goes to the brother of the deceased. In just 10% (N=11) of communities, the land is inherited by the wife. If a male head dies and leaves only female children, the children are still most likely to inherit the land (57%, N=62), followed by the husband's brother (28%, N=31), and the wife (13%, N=14).

example women in Kindia explained, “From her husband if she has children, she is entitled to inheritance. But if the woman has no children, it will be unlikely, because we often say that the woman who has no children is not entitled to inheritance.” While different land inheritance practices were mentioned throughout the study area, FGD participants most commonly noted that a woman could only inherit her late husband’s land if she had children. In the event that a woman does not have children, she either returns to her family home or, in some cases, may be granted permission to stay from her deceased husband’s family or village elders. Women in Forécariah illustrated this point and said, “Men have the right to inherit land, not women. But if the woman is married, she can inherit the land through his children. On the other hand, if [a] woman does not have children with her husband, she is entitled to nothing and if a woman in these conditions, wishes to cultivate on a parcel, she must request permission to the elders. The boys are the only ones to have the right to the inheritance of the land since they are the ones who live under the roof of their parents while the woman have to go one day with her husband.”

FGDs also reveal that a woman’s access to her late husband’s land and her access to inheritance of her father’s land is often based on her “character” and either her relationships with her natal family (in the case of her father’s land) or her relationships with her deceased husband’s family. It was commonly mentioned that “well-behaved” and “polite” women were more likely to inherit land. Women in Forécariah described, “Due to her politeness she has the right to inherit land in her father’s, in her husband’s she inherit due to the children. For pity sake she inherits in her husband’s if she does not have children... Either she has children or not if she is polite she has a part of inheritance.”

Furthermore, adults in Kindia explained, “After the death of her husband, the woman can keep the land on which she was cultivating, but provided that she had had an exemplary behavior at home. In that circumstance, they are her brother in –law who will give her... Depends on a woman’s character if she can stay on her husband’s land after he dies.”

Since women frequently outlive their husbands, the fluidity and uncertainty - captured in this discussion of "politeness" - surrounding women's access both to their deceased husband's land and their deceased father's land means that they experience a completely ad hoc situation. By strict Islamic law, women do have specific rights, and according to certain interpretations of Soussou customs one could say the same, but in practice, men can use elements of each system that disenfranchise women in order to take land for themselves. Thus, while women have some de jure "rights" to land, in de facto terms they have very few and must negotiate for continued access to their land after the death of their male family member.

TENURE SECURITY

Households in the survey area report high levels of perceived tenure security. Assessments of the likelihood of different scenarios for possible encroachment of land are presented below in Table 4.2. Of plots that are reported to be at risk of encroachment, the greatest perceived risk is losing land to members of the extended family (8%, 345 in one to two years, and 9%, 354, in the next five years). Female-headed households are 9% more likely than male-headed households to respond this way. Not surprisingly, plots held by youth-headed households (13%, N=150) and by poor households (10%, N=103) are more likely to report that it is “somewhat likely” or “very likely” that an extended family member will take over use of the field without permission in the next one to two years and report similar expectations within the next five years. Plots owned by treatment households are reported to

be at risk of encroachment at 12% higher rates than control households in the short term, and a 15% higher rate in the medium term.

TABLE 4.2. ENCROACHMENT SCENARIOS

	Extended Family 1–2 Years	Extended Family 5 Years	Government 1–2 Years	Government 5 Years	Private Investors 1–2 Years	Private Investors 5 Years
Very Likely	166 (4%)	158 (4%)	105 (3%)	101 (2%)	91 (2%)	95 (2%)
Likely	179 (4%)	196 (5%)	102 (2%)	103 (3%)	91 (2%)	87 (2%)
Neutral	188 (5%)	185 (5%)	190 (5%)	194 (5%)	184 (4%)	186 (5%)
Somewhat Unlikely	463 (11%)	489 (12%)	533 (13%)	532 (13%)	520 (13%)	513 (12%)
Very Unlikely	3070 (76%)	3034 (75%)	3182 (77%)	3183 (77%)	3229 (78%)	3230 (79%)

Government authorities and investors are perceived as less of a threat to tenure security than family members. Only 5% of plots³⁴ (N=207) are believed to be at risk of local government authorities taking the plot of land without the household’s permission. Each group shows differences, but fears of losing land are low across all of them. Plots used by youth-headed, treatment, and poor households are more concerned that local government authorities will take plots of land, either in one to two or in five years. Again, plots used by female-headed households are less likely by 4% to be at risk that local government authorities will take the plot of land. There is very little change in these likelihoods when time frame of the question changed from short to medium term. The risk of encroachment by investors is discussed in more detail in the Investor Relations section, but a similarly small number of plots are believed to be at risk of this type of encroachment in the next 1–2 years.

Plots used by male-headed households are 3% more likely to be perceived as at risk of encroachment than plots used by female households. Plots used by poor households are 2% more likely to be perceived as at risk of encroachment than non-poor households. Differences across age are also present, but at a lower rate. Plots used by youth-headed households are only 2% (6%, N=62) more likely than plots used by non-youth headed households to be perceived as at risk of encroachment by investors. Again, there is virtually no difference in attitudes towards of private investors taking plots of land by time horizon, 1–2 to 5 years.

Overall, households are confident their land is protected from encroachment, and land conflicts are rare. Almost all households ‘agree’ or ‘strongly agree’ that the boundaries of their farmland are clear and respected by people in their village (98%, N=2,118). Male and female household heads hold this belief at similar rates, but youth household heads, treatment households, and poor households are less likely to ‘strongly agree’ that their boundaries are clear and respected. Treatment households are 13% less likely to ‘strongly agree’ than control households that boundaries are clear and respected, and youth household heads are 4% less likely to ‘strongly agree’. Poor households are 7% less likely to ‘strongly agree’.

FGDs also commonly describe village boundaries as clear, well respected by neighboring villages and local authorities, and passed on by previous generations. Adults in Forécariah said, “Today, our borders with neighboring localities are clear and known by us, our children and our grandchildren...The boundaries of our community lands are clear to everyone in the village.” Another group explained in Kindia, “To know the limits of our village, our great –grand fathers did their best for our grandfathers.

³⁴ The total number of plots used by households in this study is 4,140.

In their turn, our grandfathers did their best for our parents. We also do the same thing for our children. Even if they wake me up to ask me to indicate the limits of our village, I will do so without any difficulty. The local authorities also know those limits.”

Despite detectable mistrust of local and national government officials, households are similarly confident that government officials or investors cannot take any of their land without negotiation and fair compensation. Rates of mistrust in traditional authority figures were all below 3%, but rates were higher for police, government officials, and NGOs and donors. Specifically, 14% (N=296) of respondents characterized themselves as having little or no confidence in the police, 9% (N=194) of respondents had little or no confidence in officials from the mining ministry, 7% (N=147) of respondents had little or no confidence in other officials in Conakry, and 7% (N=151) of respondents had little or no confidence in NGOs and donor projects. Nevertheless, three quarters (75%, N=1,591) ‘strongly agree’ their land cannot be taken, and another 18% ‘agree’ (N=379). Only 5% ‘disagree’ (N=115). Again, youth-headed, treatment, and poor households are less likely to ‘strongly agree’ their land is safe from encroachment from investors or government. The most dramatic difference is between the treatment and control households, a 15% gap, followed by poor households who are 7% less likely to ‘strongly agree’, and youth-headed households you are 6% less likely to ‘strongly agree’.

None of the CLOs expressed great concern about the tenure security of the customary land. CLOs were asked a series of questions about the likelihood of their customary land being taken by various people. Though generally CLOs believe the likelihood of land encroachment is very low, they are most concerned about the local government taking or selling some of their land without their permission. A handful of CLOs believe this is likely or very likely now (N=5) or in the future (N=5). CLOs are least concerned about elites taking part of their land, and 86% (N=93) believe that it is ‘impossible’ that this will happen in the next three years, and 74% (N=80) believe it is impossible in four or more years. Similarly high numbers of CLOs believe it is impossible that their land will be encroached by a neighboring village, both in 1–3 years (77%, N=83) and 4 or more years into the future (68%, N=73). The overwhelming majority of CLOs (96%, N=104) agree that their village boundaries are clear and respected by local government, and 90% (N=97) agree that companies or investors cannot take any of their village’s customary land without negotiation and fair compensation.

FGD participants commonly cited the clarity of boundaries as a key reason behind a lack of land disputes. For example, a group in Kindia said, “The boundaries are clear for everyone. That is why there are no conflicts...For farming, all operate within the limits of their fields. Everyone submits to the limits, including foreigners...The limits of community land are respected by everyone including local government officials and foreigners. There are no problems between us here,” while adults in Kindia said, “The limits of our land are clear; that is why we do not have conflicts between us and our neighbors.” As Mike McGovern notes: “Even in cases where the state or state-sponsored actors have tried to expropriate land from locals, the villagers seem to have fared reasonably well, even within a judicial system that they consider thoroughly corrupt and avoid whenever possible. This is a remarkable achievement, and shows that the current tenure system actually works well for most villagers in the four villages consulted most of the time.” (USAID 2014c, 13).

To conclude, the customary land tenure system remains robust and flexible. The local land tenure system as it is currently constituted seems to effectively manage the full range of land tenure challenges that are encountered. This present system is a complex balance in which trusted village-level actors have a repertoire for negotiating with a range of different types of outsiders interested in land for farming, plantations, or mining. Although junior men and women are in principle granted insecure

tenure rights, the prevailing situation of land abundance means that there is mixed indication of these groups being disadvantaged in practice, even in cases where the state or state-sponsored actors have tried to expropriate land from locals (USAID 2014a).

5.0 FINDINGS—ARTISINAL & SMALL-SCALE MINING

PARTICIPATION IN ARTISANAL MINING

Roughly 20% of households report any involvement with ASM (18%, N=376), but this figure corresponds to only 7% of all individuals in households (N=532). Perhaps unsurprisingly, participation rates are lower among female-headed households (5%, N=5) but higher among youth-headed households (25%, N=151). The baseline data suggests that involvement in ASM is higher in the districts designated for the PRADD II intervention by roughly 10 percentage points (23% N=248 versus 12% N=128).

Across surveys, among those who are (or were) employed in ASM, the vast majority participate as diggers or washers. In the household survey, of those who are or were involved with mining most worked as diggers or washers (59%, N=222), and often both. In the miner survey, 84% (N=767) of miners surveyed work or have worked as diggers or washers, and 16% (N=150) are or have been masters. An additional 5% are or have been owners (N=45) and overseers (N=46), respectively. On average, household survey respondents with mining experience have worked in the sector for 8 years, though there is tremendous variation among respondents (Figure 5.1, below). Similarly, respondents to the miner survey have worked in artisanal mining for 9.1 years (sd=8.2), and worked for an average of 1.9 mining sites in the past year (sd=1.2).

Among the miners in treatment districts, Safoulen is the most popular mining area, followed by Forécariah , Gberedabon, and Kansizoure. Miners from control areas favor Menyima, followed by Angola, Kebeya, and Sitaya. Miners' work sites on average, employ just under 9 diggers, 8 washers, and 2 overseers; however, mining sites in control districts appear to employ more individuals (on average) than mining sites in treatment areas.

It appears that the social cachet and romantic image of the lifestyle of miners drives many young people to pursue ASM. For respondents to the miner survey, the most frequently cited reason for deciding to become a

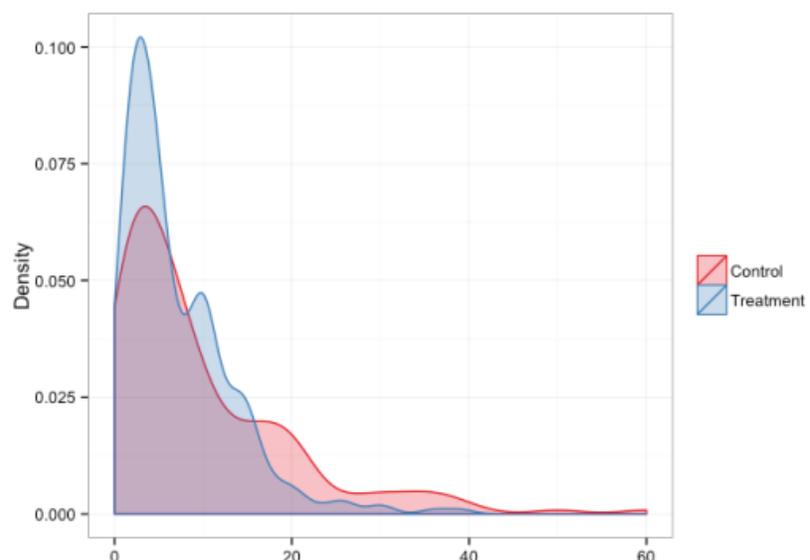


FIGURE 5.1. "HOW MANY YEARS HAVE YOU WORKED/BEEN INVOLVED WITH DIAMOND MINING?"

miner is to pursue fame or relative wealth (51%, N=465), followed by searching for well-being (45%, N=413) being attracted to the possible revenue (44%, N=405). Less important is mines offering the best possible wage (18%, N=165), pursuit of knowledge (2%, N=18), adventure (6%, N=52), and autonomy (7%, N=63). Women involved in mining cite the pursuit of fame (N=11), potential revenue (N=8), and search for well-being (N=8) as their reasons for pursuing this work. Description of this phenomenon is further developed in the Trip Report for the PRADD II project:

“...For those who spoke French, it was common for them to make reference to *l'aventure*, a kind of umbrella term that covers the dynamic referred to as *badenya* (literally "father child-ness") in the Mande languages. This time of adventure is a period in many young people's lives when they leave their villages, seeking money and the basis for starting life as social adults in their home communities,” (USAID 2014c, 3–4).

A “lottery mentality” is also common among farmers who mine on the side. Rather than investing in the future by attempting to grow a surplus, some farmers plant only the bare minimum amount of rice to feed their families for the year. When they would otherwise be farming, they mine instead and hope that their discovery of a large diamond will bring more security to their family (USAID 2014c).

INCOME GENERATION AND ARTISANAL MINING

During the mining season, miners report working roughly six or seven hours per day in the mines (6.51, $sd=2.28$). For this work, on average they earn about 6,000 GNF per day (5,920 GNF or \$0.82, $sd=10,834$). The daily pay includes food and lodging for 69% of miners (N=1,002). Food and lodging is included more often in treatment sites (72%, N=592) than control sites (64%, N=410).

While respondents to the household survey are split in assessing the likelihood of finding a diamond—45% (890) believe they will not find a diamond and 47% (N=935) believe they will—a majority of respondents to the household survey do not feel that one can support a family through diamond mining (57%, N=1,141). Almost three quarters of respondents believe that diamond mining is dangerous (74%, N=1,472), and a full 83% of respondents to the household survey feel that they could earn more in a different (non-mining) job (N=1,646).

As such, ASM is rarely a standalone profession. It can be a full-time job for some young men, but ASM is more common as a secondary or tertiary economic activity. ASM is the primary income-generating pursuit of only a very small proportion of the members of households surveyed (1%, N=65).

Among ASM survey respondents, 53% (N=482) of miners surveyed engage in additional livelihood activities outside of mining. Outside livelihood activities are 50% more common in the control areas (82% N=311 versus 32% N=171). The most common livelihood activities are rice cultivation (24%, N=224) and plantation work (9%, N=86). Sixteen percent of miners (N=111) hired their services out for agricultural labor in the last mining season, for an average of 117 days ($sd=130$). Like additional livelihood activities, agricultural labor is also more common in control areas than treatment areas. Miners in control areas also complete agricultural labor for 109 more days than treatment miners, on average (134 $sd=134$ versus 25 $sd=43$).

Miners sold a third of the diamonds that they found to banabanas³⁵ (34%, N=938), though they are much more common in treatment areas (43%, N=785) than control areas (16%, N=153). Overall, 11% of diamonds are sold to licensed brokers (N=319), though this figure is higher in control areas than treatment areas. In control areas, 14% of diamonds (N=137) are sold to licensed brokers, while in treatment areas 10% (N=182) of miners sell their diamonds to licensed brokers.

TENURE ARRANGEMENTS FOR ARTISANAL MINING

The MMG has parceled approximately 130 active and inactive mines across Forécariah.³⁶ Each parcel is one hectare and requires the user to purchase an artisanal mining permit. The cost of the permit and lack of enforcement mechanisms do not incentivize uptake and adherence to the official parceling scheme. Thus far, only 14 parcels have been purchased, and most of these are by external actors.

Moreover, the formal parceling system is not consistent with the long-established customary land tenure regime that currently regulates and manages access to the mining sites. CLOs are the descendants from the villages' founding families and have the authority to grant permission for diamond mining on their land. They authorize mining on plots between 16 and 25m² for the cost of 35,000–50,000 GNF. As discussed below, payments to the government to obtain a license are substantially lower on average than these payments to CLOs.

CLOs often organize, control, and monitor artisanal diamond mining, especially in Forécariah. FGDs reveal that the process of allocating land for mining is primarily the role of village elders and CLOs. Similar to the process that outsiders wishing to acquire land for farming must follow, outsiders wishing to acquire land for mining must approach village elders and land owners with the traditional cola nuts offering. Respondents also noted that while outsiders must pay for each pit acquired, village natives can often acquire pits without paying. Additionally, in exchange for their land, customary land owners are often granted the “right to shovel”, meaning that as land owners they are entitled to part of the profits from any diamonds found. However, cases of non-compliance with such agreements are commonly mentioned.

According to the ASM survey, miners predominantly rely on authorization from the CLO (90%, N=794), though in control districts the Master (12%, N=44) and District Head/District Council (*Chef de district*; 5%, N=19) appear to play a more active role in authorizing new mining sites. In the miner survey most mines are owned by CLOs (44%, N=1,619), but 26% of sites lack any ownership documentation (N=445). Titles are most rare, and exist on only 7% (N=119) of sites, though they are much more common in the control area—15% (N=103) of control sites have titles, compared to only 1% (N=16) of treatment sites. The land is borrowed, rented, or leased for 39% (N=661) of sites.

Government regulations, like mapping, licensing, and registration of products, are all rare, but when they do occur, are more common in the control area. Formal mapping of mining sites by the governments is rare, and has occurred in 10% (N=165) of mining sites used by miner survey respondents in the last year. Mapping is more common in the control area, as 15% of sites in the control area have been mapped (N=101), compared to just 7% of treatment mining sites (N=64). Of these mapped sites, 31%

³⁵ Banabana are non-licensed diamond buyers who travel to the ASM sites to purchase diamonds.

³⁶ The break down for the parcels is as follows: Gbérédabon—35, Safoulen -35, Forécariah -16, Siratoumany -19, Woula -8, Kansixoure -10, Momoyire -4, and Doto -3

(N=45) require a formal license or mining permit. Again, this percentage is higher for control areas (43%, N=39) than treatment areas (11%, N=6).

Table 5.1 presents the proportion of miner’s who presently hold documentation. On their current worksite, 11% of miners (N=100) were required to acquire some type of documentation, but only 1% (N=12) was required to attain a formal mining license. Nearly all of these miners work in the control area (N=11). Only 4% (34) of miners have ever registered their production, and there is a large difference between the control and treatment areas—9% (N=31) of miners in the control area have registered at least once, compared to 1% (N=3) of treatment area miners.

TABLE 5.1. DOCUMENTATION FOR SITE ACCESS

	All	Treat	Control
No Documentation	775 (89%)	449 (86%)	326 (92%)
Documentation	100 (11%)	69 (14%)	31 (8%)
Total Observation Number	883	524	359

From the household survey, the vast majority of mining sites (over 80%) have not been formally mapped by the government, and documentation was a prerequisite to accessing mining sites in less than 10% of cases. Despite these low overall levels, documentation is 12 percentage points more likely to be required in control districts.

According to data collected during the CLO survey, 30% (N=32) of CLOs have a mining site on their customary land. Ten of these mines (31%) have been formally mapped, and of those that have been mapped, half have formal permit or license (N=5). The CLO is the holder of the license in three of these cases.

Miners pay government officials or CLOs for the ability to mine on various sites. Payments to CLOs are larger, and average 44,507 GNF (sd=7,475), approximately \$5.94³⁷. The amount is substantially higher in treatment areas (47,341 GNF, sd=12,170) than control areas (34,636 GNF, sd=40,576). Government payments average 1,209 GNF (sd=7,064), or \$0.16, and are similar in both control and treatment areas.

Respondents to the household survey who are involved in mining were asked to estimate the cost of mining a pit without a formal permit on the site where they currently work. The reported cost of mining a pit on a site without a formal mining permit also varies across the treatment and control areas. The average cost is higher in control areas (298,601 GNF, sd=698,235) relative to treatment areas (46,677 GNF, sd=14,226).

³⁷ At \$1=7,496.81 GNF

MINING CONFLICTS

The incidence of conflicts is higher at mining sites than other land areas, since 27% (N=240) of miners included in the mining survey and 28% (N=106) of the mining households included in the baseline household survey reported knowledge of at least one conflict. Table 5.2 contains these results from the ASM survey, disaggregated by treatment assignment. Of the miners who experienced a conflict, half (49%, N=118) experienced one conflict, while the other half experienced two or more conflicts during this time. Conflicts appear to be more common in treatment areas (29% N=155 versus 23% N=85).

TABLE 5.2. MINER KNOWLEDGE OF CONFLICTS AT MINING SITES

	All	Treat	Control
No Conflicts	658 (73%)	371 (71%)	287 (77%)
At Least One Conflict	240 (27%)	155 (29%)	85 (23%)
Total Observation Number	916	535	381

Of these 106 households reporting conflicts, 65 came from treatment districts and only 41 from control areas. (There are 48 youth-headed households among this group, 32 classified as poor, and only two that are headed by women.)

As in other areas, most conflicts at mining sites are disputes about boundaries (61%, N=264), followed in a distant second and third by the theft of stones (or allegations thereof) (12%, N=51), and mining rights (6%, N=28). Diggers and washers are the most common actors involved in a conflict (62%, N=272), followed by laborers (37%, N=160). CLOs were a party in only 8% (N=35) of the conflicts, while overseers and masters were involved in 14 to 16% of conflicts, each (N=70 and N=62, respectively).

According to household survey respondents who participate in ASM and heard about at least one mining conflict in the last year, the majority of disputes involve actors that are not from the same village or commune as the respondent. This calls for further investigation, since this could mean that either respondents do not want to implicate their neighbors in disputes or conflict may be much more prevalent among migrants. Unsurprisingly, respondents report more recent disputes: the vast majority of recorded conflicts occurred within the last two years. Most likely, this is attributable to recency bias. There also appears to be a notable uptick in conflicts in March.

Some conflicts in this context did escalate, as 17% of disputes involved violence or destruction of property by one or more parties. In the household survey, there appears to be a marked difference in the probability that a conflict turns violent across treatment and control districts. This calls for further investigation. It may be the respondents in control districts were just far less likely to report lower-level conflicts, in which violence was not used or threatened. This would explain why respondents in control districts report fewer conflicts, but also more violent conflicts.

Nearly all conflicts are reported as resolved. Masters and CLOs play the largest role in conflict resolution. The master or mine boss was the most common actor to help resolve the conflict (40%, N=174). CLOs were involved in the resolution of 17% of conflicts (N=75). Most miners are satisfied with the resolution achieved: across surveys, the respondent believed that the resolution of the conflict was fair in more than 90% of conflicts.

Conversations surrounding mining-related conflicts in the FGDs reveal that the belief that mining activities lead to increased disputes and violence is common. Groups of women in particular express

perceptions of fear and violence regarding mining conflicts, as one group of women said, “When there is fighting in the mining camp, this scares because they use even shovels, pickaxe during the fight. They are often recorded in cases of serious injury or sprains which may lead them to the hospital.”

Even though the prevalence of mining conflicts is higher than other land conflicts, other reports have suggested that conflicts between locals and miners are less common than they could be because villagers “have taken proactive measures (strict rules about miner’s behavior, barring them from sleeping in villages) that had been successful in avoiding conflicts,” (USAID 2014c, 9). These rules are a means of dealing with anxiety about the threat posed by an influx of strangers, alcohol, drugs, or money into the community.

KNOWLEDGE AND AWARENESS OF MINING POLICY AND LAWS

Knowledge and awareness of policies and laws about mining is very low across the study area.

Just 5% of respondents (N=104) to the household survey have heard of the Kimberly Process. Poor households are slightly less likely than other households to have heard of the Kimberly Process, and only two female-headed households have heard of the policy. Of those few households who have heard of the policy, knowledge of the Kimberly Process is mixed. Most respondents could not identify the primary goal of the policy (N=84), but most could correctly identify Guinea as a participant in the process (N=69) and identify diamonds as the mineral the Kimberly Process regulates (N=75).

Eight percent (N=74) of respondents to the miner survey have heard of the Kimberly Process (KP), a figure that is similar across treatment and control areas. Of the 74 miners who are aware of the KP, the most common method for learning about the process was radio (36%, 27), followed by neighbors, friends, and family (20%, 15), NGO and donor information session (19%, 14) and mine bosses and owners (18%, 13). Less common sources for learning about the KP are newspapers (4%, 3), community leaders (4%, 3), and government officials (1%, 1).

Among the miners who have heard of the KP, most miners correctly identified that the KP regulates diamonds (N=56) and correctly identified Guinea as a participating country in the KP (N=51). Some also stated they knew the primary purpose of the Kimberly Process Certificate Scheme (N=17).

There is slightly greater, though still low, awareness of the National Mining Law, which regulates mining rights, as 8% of household respondents (N=155) have heard of this law. However, household survey respondents who are owners of land where mining takes place have heard of the law at a higher rate³⁸. Poor households are slightly less familiar with the law than other households—just 4% of poor households have heard of the National Mining Law, compared to 9% of other households. Over 80% of household respondents who have heard of the law could correctly identify true or false statements about the rights protected by the National Mining Law, including that no right to prospect is valid without the consent of the landowner (84%, N=134), and that a mining right does not extinguish a property right (83%, N=129).

A slightly higher percentage of miners are familiar with the National Mining Law (11%, N=102). Miners in the control area are 8% more likely than miners in the treatment area to say they are familiar with the

³⁸ 10 of 62 households who own land where mining takes place (or has taken place in the past) have heard of the National Mining Law.

law (16% N=59 versus 8% N=43). Like the KP, the most common process for learning about the National Mining Law is the radio (39%, 40), followed by neighbors, friends, and family (25%, 26), mine bosses and owners (13%, 13), and government officials (11%, 11). Less common sources are newspapers (7%, 7), community leaders (5%, 5), and NGO information sessions (2%, 2).

Miners are also better informed about the National Mining Law than the Kimberly Process. Most miners who have heard of the law correctly identified that the National Mining Law recognizes the right to compensation for interrupted land use (91%, N=91), correctly agreed that mining rights do not extinguish property rights (86%, N=84), and correctly identified that no right to prospect or operate is valid without consent of the landowner (83%, N=88).

Nine percent (N=85) of miners surveyed are familiar with the Land Code, primarily through radio (57%, N=51). Of those familiar with the Land Code, 77% (N=58) of miners correctly identified that obtaining official documentation for property can be done only through the Land Registry.

PERCEPTIONS OF MINING POLICY AND AUTHORITIES

Miners were asked how much they agreed or disagreed with a series of statements about mining licenses and the permitting process. The questions reveal that while most miners believe a mining license or permit would be beneficial to reduce conflicts and protect their access rights, the process to acquire a license is prohibitive, usually because it is not well understood.

In general, miners believe that permits will be beneficial for protecting from conflicts and getting higher prices for their diamond, but are less sure of the overall benefits or necessity of acquiring such a permit. 46% (N=409) of respondents agree with the statement 'It would not benefit me to have a license', a surprisingly high number based on the percent that agree with other statements about the expected benefits. For example, 87% (N=782) of miners believe having a permit will help them get a higher price for their diamonds.

However, not having a permit does not appear to limit miners' access to mining sites. Nearly 90% of miners (89%, N=788) agree they can access a mining site through the landowner, without need for a permit, and half of miners believe the size of the parcel association with a permit is too big for them (48%, N=427). Miners in the treatment area are 12% more likely to have access to land through a landowner than miners in the control area (94% N=493 versus 82% N=295), and 18% more likely to believe the parcels are too large (55% N=294 versus 37% N=133).

The primary perceived benefit of mining permits appears to be their ability to protect miners from expropriation and conflicts. Almost all miners believe having a permit will protect their pits from being taken (89%, N=819). Large majorities—between 85% and 95% of miners—believe that mining permits will protect them from conflicts with a variety of people, including the police (91%, N=814), farmers (86%, N=769), other miners (92%, N=816), other diggers or washers (87%, N=779), and the land owner (90%, N=806). Finally, 85% (N=758) of miners believe permits will generate revenues for the government, and is similar in both treatment and control areas.

Lack of awareness, expense, and a slow and complicated process to acquire a permit are all serious obstacles identified by a majority of miners. Most miners 'agree' or 'strongly agree' with the statement 'I do not know how to get a license' (89%, N=789). Three-quarters of miners (75%, N=668) agree it is

very difficult to gather all of the documents, and the same percentage (74%, N=657) agree that the process of gaining a license is very slow. Another 65% (N=577) agree that the price for the license is too high, and 26% N= (239) are “neutral” about the price, which suggests they may not be aware of what a license costs. Corruption is also a concern, and 62% (N=547) of miners agree that there is bribery involved in obtaining the license.

Overall, these obstacles appear to be greater in the treatment area. Miners in the treatment area are 17% (82% N=435, versus 65% N=233) more likely than miners in the control area to find it difficult to gather all of the documents necessary for a permit, and 13% (79% N=419, versus 66% N=238) more likely to find the process very slow. Miners in the treatment area are also 9% (68% N=362, versus 59% N=215) more likely to agree the price of a license is too high, and 11% (66% N=350, versus 55% N=197) more likely to agree that obtaining a license involves bribery.

Logistical obstacles to licensing are compounded by lack of trust in the Mining Ministry. One in ten (9%, N=194) respondents to the household survey had little or no trust in officials from the Mining Ministry.

Complementary qualitative analysis also reveals that, while very few focus group respondents noted the existence of officials from the mining industry in their villages, the majority of those who did also expressed little to no confidence in these officials. For example, a group of adults in Forécariah stated that the National Coordination of Diamond and Miners of Guinea (NCDMOG) and the National Union of Diamond and Miners of Guinea (NUDMOG) were represented in their village. However, their discussions of the institutions reveal broken agreements, such as lack of compliance with negotiated procedures for granting license to mine in the village. The group explains that instead, miners are often granted areas based on existing relationships, “Decisions on mining in this village are not transparent; since both institutions had agreed that if someone wants to exploit the diamond in the village should first meet the elders. This agreement has not been respected. People are allowed to work on the fields because of kinship and pity links.” The adults further elaborate, describing inconsistent statements and management by these national groups and a lack of benefits from mining activity to the host community, “Sometimes we are consulted by both institutions, but the paradox is that there is a gap between what they say and they do. In principle, we have to work with these institutions in case of problems or others. If they make money coming in, we should take for the district. Even landowners who sell their plots, the district must benefit. But such is not the case.”

A group of youth in Forécariah discussed deception perpetrated by the institution responsible for mining in their village and said, “There is a committee which is in charge of the application of rules in mining areas. This committee is composed of the natives in majority. The prefectural direction of mines is also much represented. Often this direction deceives us. I find it ineffective to accomplish its task.” Speaking of the mining authorities in their village, adults in Forécariah said, “When the landowner makes a complaint, it is ridiculed by those with whom he is in trouble. Quite simply, the person bribed those responsible for pronouncing the judgment.” The discussions of mining institutions illustrated in the quotes above suggest strong feeling of distrust among village inhabitants towards mining officials.

Other focus group participants expressed a lack of confidence in the Central Government and other officials in Conakry, revealing that these institutions were unresponsive to complaints or unwilling to help. For example, a group of adults in Forécariah said, “Every time we complained to [the

government]³⁹ at Forécariah that our district does not receive anything regarding the impact of mining, he always told us that it is our fault. He always told us to close the mine if we don't benefit from it.”

SOCIOECONOMIC AND ENVIRONMENTAL IMPACTS OF MINING

When asked about the economic effects of ASM in their communities, respondents to all three surveys recognize that this sector can provide jobs, rents to landowners, and increase trade; yet, they note that these benefits must be weighed against several drawbacks: higher food prices, in-migration, and increased violence and drug-use. Table 5.3 on the following page presents the full range of positive and negative effects of ASM.

TABLE 5.3. POSITIVE AND NEGATIVE EFFECTS OF ASM

	All	Treatment Status		Gender of Household Head		Age Group of Household Head		Socioeconomic Status	
		Treat	Control	Female	Male	<36	>=36	Poor	Other
Pro: Provides Good Jobs	593 (27%)	288 (27%)	305 (28%)	25 (22%)	568 (28%)	190 (31%)	403 (26%)	150 (28%)	443 (27%)
Pro: Provides Rents to Land Owners	441 (20%)	256 (24%)	185 (17%)	13 (11%)	428 (21%)	148 (24%)	293 (19%)	127 (23%)	314 (19%)
Pro: Increases Trade	275 (13%)	121 (11%)	154 (14%)	19 (17%)	256 (12%)	89 (15%)	186 (12%)	71 (13%)	204 (13%)
Pro: Improves Roads	329 (15%)	211 (19%)	118 (11%)	12 (10%)	317 (15%)	95 (16%)	234 (15%)	78 (14%)	251 (15%)
Pro: Increases Construction in Village	223 (10%)	119 (11%)	104 (10%)	15 (13%)	208 (10%)	63 (10%)	160 (10%)	46 (8%)	177 (11%)
Pro: Improves Village Economic Development	40 (2%)	17 (2%)	23 (2%)	2 (2%)	38 (2%)	12 (2%)	28 (2%)	10 (2%)	30 (2%)
Pro: Improves Access to Clean Water	17 (1%)	5 (0%)	12 (1%)	NA (NA%)	17 (1%)	3 (0%)	14 (1%)	6 (1%)	11 (1%)
Pro: Improve Access to Electricity	9 (0%)	6 (1%)	3 (0%)	1 (1%)	8 (0%)	4 (1%)	5 (0%)	3 (1%)	6 (0%)
Neg: Food is More Expensive	643 (30%)	392 (36%)	251 (23%)	32 (28%)	611 (30%)	200 (33%)	443 (29%)	159 (29%)	484 (30%)
Neg: Increase in Migration	552 (25%)	285 (26%)	267 (25%)	22 (19%)	530 (26%)	167 (27%)	385 (25%)	136 (25%)	416 (26%)
Neg: Increase in Crime	224 (10%)	102 (9%)	122 (11%)	6 (5%)	218 (11%)	70 (11%)	154 (10%)	63 (12%)	161 (10%)
Neg: Increase in Drug Use	277 (13%)	126 (12%)	151 (14%)	16 (14%)	261 (13%)	83 (14%)	194 (12%)	82 (15%)	195 (12%)
Neg: Increase in Conflict	420 (19%)	260 (24%)	160 (15%)	21 (18%)	399 (19%)	114 (19%)	306 (20%)	106 (19%)	314 (19%)
Neg: Increases Fights About Women	335 (15%)	226 (21%)	109 (10%)	12 (10%)	323 (16%)	104 (17%)	231 (15%)	77 (14%)	258 (16%)
Neg: Increases Disease	47 (2%)	23 (2%)	24 (2%)	2 (2%)	45 (2%)	12 (2%)	35 (2%)	13 (2%)	34 (2%)
Neg: Environmental Destruction	322 (15%)	75 (7%)	247 (23%)	25 (22%)	297 (14%)	86 (14%)	236 (15%)	64 (12%)	258 (16%)
Observations by Group	2165	1083	1082	115	2050	613	1552	540	1625

³⁹ Personal identifiable information has been redacted.

The qualitative findings also shed light on both the experienced and perceived potential economic effects of ASM such as inflation, violence, loss of land for farming, and pollution. In villages where mining activities were not present, FGD participants were oftentimes well aware of mining elsewhere and the negative effects it had brought. Respondents also repeatedly stressed the fact that mining does not benefit the native inhabitants of a village, only the outsiders that come to mine and then leave thereafter. The following excerpt from a FGD with women in Forécariah represents this point well.

“I ignore the advantages that the artisanal mining sector could bring to our community. I know with this sector the abduction of women increases. This sector destroys cultivable lands. When diggers arrive in a locality they make holes that they never close back. That prevents farmers to work. Another inconvenience that I can quote is the rise of foods price and other necessary goods. That is what provokes hunger in the village because the majority of the inhabitants are not implicated in the extraction of diamond... As another inconvenience, you must quote the destruction of the low grounds, the decreases of the farming man power...The artisanal mining sector provokes the pollution of rivers through the deposit of gravels on their bed, without mentioning that woods are cut in [an] abusive way. Cultivable lands as far as low grounds are destroyed. Mining exploitation starves the village. It destroys soils and provokes prices increase, theft of fruits and plants and crime. With this sector, pity⁴⁰ disappear[s] in the village and increase[s] the suffering of the population.”

CLOs are divided about the impact of ASM on their community. Roughly half of CLOs believe that ASM has a “negative” or “very negative” influence (N=14), but roughly half believe ASM has “positive” or “very positive” impacts (N=13). The most common positive benefits observed include better jobs (N=9), rents to land owners (N=8), increases in trade (N=8), and better roads (N=6). The negative impacts of ASM are more numerous. CLOs believe that ASM has caused food prices to increase (N=15) and that ASM increases migration (N=13). Less prevalent negative effects include increased conflict (N=9), increased drug use (N=7), increased crime (N=5), and increased fights over women (N=5).

While miners are aware of the environmental impacts of mining and recognize the importance of these impacts, few have adopted mining practices that minimize damage to the environment, such as restoring mined-out pits or streams.⁴¹ In the miner survey, 92% (N=788) of miners believe it is important to restore mined-out sites, however, 69% (N=635) of miners report never refilling a mining pit in the past year. Only 18% (N=169) of miners report they ‘always’ or ‘frequently’ refill mining pits. Refilling pits is more common in the control area, where only 64% of miners (N=234) never refill mining pits, compared to 75% of miners in the treatment area (N=401). The main reason stated that miners do not refill their pits is that there is no rule requiring pits to be refilled (32%, N=192) and refilling pits is too time consuming (31%, N=187).

In the household survey, 90% of respondents (N=1945) indicated that they believe that mining activities can cause problems for rivers, forests, and farmlands, and 72% of households ‘strongly agree’ that mining activities cause environmental problems. Ninety percent of respondents (N=1,910) also believe that it is important to restore mined-out sites.

⁴⁰ The use of the word ‘pity’ is understood as meaning empathy.

⁴¹ One of PRADD’s objectives is to increase the use of trenching, a method that both allows for higher recovery of diamonds by exposing more of the diamond-bearing gravel and when coupled with backfilling, mitigates the environmental impacts of the excavation process. At baseline, less than half of miners have heard of the trenching method of mining (44%, N=402), but of those who have heard of it, 74% (N=286) have practiced trenching at some point. Eighty-one percent of miners who have heard of trenching but not practiced it (N=82) are willing to practice trenching in the future.

Overwhelmingly, household survey respondents believe that it is important to restore mined-out sites to facilitate future agricultural cultivation of the land. Other responses to this open-ended question noted that restoration can prevent accidents on the site, such as children falling into unused pits. A handful of responses cited concern for water quality in the area if the site is not restored. Interestingly, divergent attitudes about the importance of restoring mined-out sites appear to stem from different perceptions of the ability of restoration to revive land for cultivation, rather than differing values about the importance of this land. These respondents expressed feelings that at these sites, “The soil will be unusable,” and as a consequence, “Cultivation will always be impossible.”

Despite respondents acknowledging the importance of restoring mined-out sites, communities lack rules to enforce behaviors that would improve mining site conditions. In the household survey, rules requiring restoration are reported by less than a quarter of respondents (20%, N=427). Treatment areas are even less likely to have these rules (8%, N=81). Where rules exist, they are not followed consistently. Over half of respondents report that no miners obey rules about restoring mined-out sites (65%, N=762), and just 20% of respondents believe all or most miners obey the rules (20%, N=238). Punishment is also enforced unevenly. Overall, 69% of respondents (N=806) claim no people are ever punished for breaking rules about mining site restoration, and only a quarter of respondents believe that rule breakers are always punished (25%, N=295). There is also considerable difference between treatment and control areas with respect to attitudes about enforcement. In control areas, 31% (N=228) of respondents believe that ‘No people are ever punished for breaking the rule’, while in treatment areas only 15% (N=67) of respondents expressed this viewpoint.

Qualitative findings also highlight the fact that rules requiring the restoration of sites are either non-existent or rarely enforced. FGD respondents commonly mention that land owners do not require miners to agree that they will restore the sites before granting them land to mine on. Instances of outsiders coming to mine, exploiting a site, and then leaving behind gaping holes are also mentioned often.

Youth in Kindia explain, “Money that we receive after the selling of our diamond cannot allow us to restore the holes, we cannot do it with the hand, you must fuel a bulldozer to do it. As such, we do not have this means to restore more of 100 pits. It is also difficult to engage, for example, 5 people to close back these holes. There are bosses, when they find [a] diamond, [they] disappear without leaving the trace. They go either to (...) or on another mining site. And workers who he maintained benefit only of crumbs to feed their family.”

Women in FGDs stressed that open pits are dangerous to children and livestock, particularly when they are filled with rainwater. In more than one village, children had drowned after falling into unrestored sites. One group of women explained, “We know nothing of the advantage that pulls the diamond but on its way there are large holes where it was dug, that makes our children and animals in danger. Also all our [swampland for agriculture]⁴² [is] now useless because [there] are holes everywhere... From diamond we only know the damage it causes. These are the holes where our children may fall at any time.”

Similarly, in the miner survey, only a quarter (25%, N=224) of miners report that their village has rules that require restoring mined-out sites. These rules are much more common in the control area (46%, N=169) than the treatment area (10%, N=55). In villages where rules do exist, 43% (N=96) of miners

42 Originally translated as “shallows for culture”.

believe that all or most miners obey the rules. Miners have varying interpretations of how rules are enforced. While 38% of miners (N=87) report that people who do not follow these rules are always punished, 40% of miners (N=91) report that people who do not follow the rules are never punished.

Of the CLO's with mining sites on their customary land, most (N=23) strongly agree that mining activities can cause problems for rivers, forests and farmland, and all (N=32) believe it is important or very important to restore mined sites. The most important reason for restoring mined sites is for agriculture (N=22), followed by rice cultivation (N=4). A handful of CLOs reported that restoring mining sites is important for land restoration.

6.0 FINDINGS—INVESTOR RELATIONS

Investors are uncommon in Forécariah and Kindia, and 98% of household survey respondents report no investor activity in their communities. Of the 41 respondents who affirmed the presence of investors, the overwhelming majority (N=38) are in the Kindia area. Agribusiness is the most common investor activity (N=17), followed by mining (N=11). Only four CLOs reported an investor presence. Investors in three of those communities are involved in agribusiness. All investors work on the CLO's customary land.

The qualitative data also suggests little investor activity in the areas surveyed. When focus group participants were asked if any companies had attempted to acquire land in their village for mining or agricultural purposes over the last three years, only a handful of groups said yes. Among the FGDs that did report investment activity, mining, plantations, and agribusiness were among those mentioned. Another few groups mentioned that inquiries were made, and said companies had approached their village inquiring about land, but then left shortly afterwards.

Overall, data from the household and CLO surveys reveals that community response to investor activity is mixed. Specific responses from the two surveys are summarized below, but in general, at least half of the communities who have had contact with investors have received benefits. Fewer households and CLOs report specific negative effects, but respondents to both surveys are split when asked whether they think things have gotten better or worse since investors' arrival. While participants overall feel secure in their land tenure despite investor presence, there is an undercurrent of anxiety about losing land for farming or fishing.

Out of the 41 household survey respondents that reported the presence of investors in their communities, two-fifths believe that outside investment has improved their community (N=17), including 11 who believe things in their community have gotten 'much better' since the arrival of outside investors. The majority of respondents (N=27) report receiving benefits from investors, with salaried jobs (N=8) and money (N=6) reported as the most common. Other benefits, such as roads (N=2) and schools (N=3), are also reported, but infrequently. All four of the communities in the CLO survey that reported investment activity also received benefits. Two communities received salary jobs, one community received training, and two communities received infrastructure.

While the majority of respondents report receiving benefits from investors, just under half of household survey respondents (N=20) believe that things in their community have gotten worse since investors came. When asked about specific negative effects in the community due to investors, only seven household survey respondents reported any negative effects. The main problems said to be caused by investors were lost land for farming (N=6), lost water for fishing (N=3), and the destruction of medicinal plants (N=1). There is no consensus among the CLOs whether or not their communities have gotten better or worse since investors came. Half the CLOs (N=2) report negative results from investors including lost land for farming and lost water for fishing.

In Kindia, FGDs with adults and youth reveal a specific case of a village that was left worse off due to investor activity. In this village, an investor from the United States was granted land for farming purposes but spent only two years working in the village. When asked about the negative effects on their village, the adult FGD participants revealed that the investor destroyed the village's trees explaining, "Yes, our palm trees and avocado trees have been cut without receiving any compensation. Then, we lost two years without working." Expanding on the lack of compensation that the community received, the adults go on, "Our community did not receive anything as advantage. The only thing that they did was to give us a ton of cement. That is what allowed us to roughcast and do the paving of our mosque.... Apart from that we did not receive any compensation." Youth focus group participants further suggest that the village did not receive any benefits from the investor and said, "I earn more in the [swampland]⁴³ working there myself than what I earned as a wage working there for that investor."

Baseline findings also reveal that community involvement and negotiation with investors appear to be driven more by community meetings than legal documents. Written contracts with investors are rare, as only 13 respondents report having a written contract between investors and their community. No CLOs reported a written contract with investors. Community meetings about investor activities are more common, and 24 respondents attended meetings or negotiations about the work investors would be undertaking in their communities. Less than half of these respondents (N=10) asked questions or made other contributions in these meetings. Three of the four CLOs who reported investment activity in their area reported they were involved in meetings or negotiation and authorized investors to work on the land before activities began. In the remaining case the investor received authorization from village elders.⁴⁴ The qualitative data also contains more evidence of community meetings about investor activity than evidence of written contracts, as only one group mentioned formal documents.

While survey findings reveal that at this point in time, interactions with private investors are not common in the study area, the qualitative data still provides interesting insight into the processes behind land allocation to investors, the structures in place that influence investment related decisions, and perceptions of tenure security relevant to investment activity. FGD participants commonly explain that if a company approached their village wishing to acquire land, the company would first need to meet with the village elders, who would then consult the broader community in regards to the decision. For example, youth in Kindia said, "If a company wishes to set up in the village they must talk to our father who is called (...). Then, he will talk to young people about the company and its intention to overtake its activities. Our father asked us about our opinion. In turn, we examine the question by trying to know what will its impacts on our village. If we are convinced that the company would be benefit, we tell [the] wise people that we agree. Therefore, they finally they make decision to offer lands to the company."

Women in Kindia provide further details on the process of allocating land to an investor. Describing the case of an agricultural investor in their village, the women explain, "When the... Imam... came for his pineapple plantation, the wise requested a meeting in which everybody was present including women and young. Every one gives his/her agreement and the Imam got the land. It was a great satisfaction for all...when we were informed by [the] wise ones that the first Imam wants our lands to implement his pineapple's plantation, everybody was delighted. We lent him the land, but we neither sell nor lease. The day he would like to leave, he returns the land to us. Women and young [people] were informed."

43 Originally translated as "shallows".

44 The investor in one community also needed to receive authorization from the CRD or sub-prefecture head before beginning work.

These quotes and similar discussions suggest that while village elders oversee the process of allocating land to investors, investment related decisions are often based on community consensus.

Furthermore, the discussions suggest that investor-related decisions, similar to the other land-related decisions previously mentioned, are perceived as transparent and participatory. Respondents commonly said that the village elders must consult with the other members of the village before granting access to an investor. One group in Forécariah said “We're not crazy. If a company wants our land, it is necessary we coordinate between us. Even our parents are living in Conakry they'll take part in this consultation. We would invite citizens' on to take part in the consultation so that we can decide together.” Similarly, youth in Kindia explain, “If a company wishes to set up in the village they must talk to our father.... Then, he will talk to young people about the company and its intention.... Our father ask[s] us about our opinion. In turn, we examine the question by trying to know what will its impacts on our village. If we are convinced that the company would be [a] benefit, we tell [the] elders that we agree. Therefore, they finally they make decision to offer lands to the company which are not for sale, we lend them.” Such quotes reveal perceptions of transparency and consensus surrounding investment-related decisions and the process of allocating land to investors.

In terms of tenure security related specifically to investors wishing to acquire land, the overwhelming majority of FGD respondents revealed that they are confident that no company could take any of their village's land without adequate consultation and negotiation, thus complementing the previous discussions of high perceived tenure security in the study area. In almost every village the most common reason given by respondents for their confidence surrounding negotiation with investors was that they trust their village elders and the processes in place for outsiders wishing to acquire village land. For example, women in Forécariah describe, “We are confident [that] no company /investor will come to take lands belonging to all the village without negotiation because we have the representatives who will be in the future discussions on behalf of the village for a correct compensation of inhabitants who will be assigned by activities of the company,” while another group in Kindia said, “If enterprise come to us, it has to meet [with] the old people. We trust our old people, local authorities and our youth. Whatever happens in our village, we don't think that any companies can take our land without paying the community members.” Respondents also frequently mentioned specific conditions that they would put in place when/if negotiating with investors, such as the construction of roads, schools, and other village infrastructure. The confidence expressed surrounding the processes of allocating land to investors, and the mention of specific conditions and restrictions that would be put in place before allowing an investor to operate, suggest that FGD participants trust in their leader's capacity to negotiate with the private sector and to ensure that their community will be properly consulted and compensated.

There is also widespread trust among respondents that investors will not take any of their household's plots of farmland. Data from the household survey shows that households believe that it is ‘somewhat likely’ or ‘very likely’ that a private investor will take their plot of land without permission for just 4% (N=182) of plots, regardless of time horizon (1–2 years or 5 years). On the other hand, respondents think that encroachment by investors is ‘very unlikely’ on 79% of plots (N=3,229).

7.0 BALANCE AND POWER

BALANCE

Regressions were run to check for group balance across treatment assignment and for important subgroups such as female-headed households, youth-headed households and poor households. As described below, there are some concerns about balance between the treatment and control groups on several key indicators, and the study team plans to address these issues through the application of matching techniques during endline analysis.

TREATMENT AND CONTROL

This report uses two approaches to gauge balance between the treatment and control groups on a variety of factors. The first is a fixed effects linear model, using village level clustered standard errors, where variables are regressed against a dummy variable indicating PRADD treatment. In short, this allows us to test whether or not treatment status alone "predicts" a difference between the treatment and control groups for a given outcome. With a well-balanced sample, we expect there to be no statistically significant differences between treatment and control groups. In other words, in this ideal scenario, we expect that treatment status is not a good predictor of outcomes. While this is a well-used method of testing balance, many dataset properties, such as sample size, may affect significance (Imai et al 2008). The second way we test balance is by taking the standardized difference in means for each variable, and reporting the standardized percent bias (Austin 2009). Under this approach, variables with an absolute percent bias < 25% are considered balanced (Stuart 2010). Typically, in this context a statistically significant regression estimate, but a low % bias indicates a low response rate or very uniform response, where unique responses tend to be in one group. At the baseline, these two measures are sufficient to show that the control group can act as an accurate counterfactual to the treatment group for the endline analyses.

Important variables were checked for balance between treatment and control groups at the individual and community level, including sample characteristics and likely indicator variables of key outcomes in the analysis⁴⁵. In this subset of variables, the overall sample has some instances of imbalance, particularly in the household survey. As shown in Table 7.1 below, 12 of 18 key household survey variables are unbalanced, with 9 of these variables at the 1% level of significance.

Imbalance is a risk of any quasi-experimental DID design, and attention during endline data collection and analysis can maximize the evaluation's ability to detect change in the outcomes of interest. To better isolate the treatment effect, and adjust for any balance issues, the evaluation will use a matching technique to pre-process the data for endline analysis. In particular, propensity score matching, genetic matching or entropy weighted matching will be used to improve balance between the treatment and control groups on key covariates. These results will be presented and discussed in a pre-analysis plan for the evaluation (forthcoming).

⁴⁵ As discussed, in section I, the evaluation pre-analysis plan (forthcoming) will present detailed, comprehensive information about indicators to be used in endline analysis.

TABLE 7.1. HOUSEHOLD SURVEY BALANCE ANALYSIS

	Treatment		Constant		Number of Observations	% Bias
	Variable Estimate	Variable SE	Constant Estimate	Constant SE		
Labor Availability	-0.27**	0.12	3.45	0.08	2165	16.5%
Ethnicity	0.59***	0.18	4.41	0.17	2114	52.54%
Migration	-0.02	0.06	0.18***	0.06	2082	6.63%
Age of Household Head	-3.37***	0.93	48.84***	0.74	1723	22.7%
Highest Level of Education by Household	-2.41***	0.54	5.56	0.49	2163	49.76%
Involved in ASM	0.05	0.06	0.18***	0.04	2165	13.09%
Number of Rice Plots by Household	0.42***	0.07	0.68	0.06	2124	73.06%
Number of Plots with Trees by Household	-0.53***	0.09	0.87	0.08	2079	74.83%
Boundaries Respected	0.13***	0.04	1.05***	0.01	2124	41.1%
Likelihood of Government Expropriation	0.13	0.13	1.33***	0.12	2124	15.71%
Experienced Land Dispute	-0.02***	0.01	0.03	0.01	2125	12.61%
Community has Meetings about Land	-0.01	0.03	0.11***	0.02	2165	3.95%
Land Governance Index	0.01	0.01	1.02***	0.01	1933	6.59%
Mining can Harm Environment	-0.11***	0.02	0.96***	0.01	2146	40%
Restoring Mined out Sites is Important	0.11***	0.02	0.85	0.02	2126	35.4%
Socio-Economic Status	0.08**	0.03	0.21	0.02	2165	17.51%
Heard of KP	0.03*	0.02	0.03	0.01	2157	13.98%
Heard of Land Law	0.02	0.02	0.06***	0.01	1974	7.69%

Tables 7.2 and 7.3 present balance analysis for the CLO and Miner surveys, respectively. One key CLO survey variable is also unbalanced between treatment and control at the 1% significance level, and 5 of 12 key ASM survey variables are imbalanced, with 4 at the 1% significance level.

TABLE 7.2. CLO SURVEY BALANCE ANALYSIS

	Treatment		Constant		Number of Observations	% Bias
	Variable Estimate	Variable SE	Constant Estimate	Constant SE		
Distance to Road	8.54***	1.8	8.62	1.11	108	94.81%
Distance to Market	0.85	1.21	8.05***	0.74	108	13.99%

TABLE 7.3. MINER SURVEY BALANCE ANALYSIS

	Treatment		Constant		Number of Observations	% Bias
	Variable Estimate	Variable SE	Constant Estimate	Constant SE		
Miner Age	-3.46**	1.69	38.87	1.49	879	27.14%
Miner Ethnicity	2.24***	0.71	4.14	0.46	911	36.72%
Miner Education	-0.21	0.45	3.63***	0.41	873	4.72%
Miner Migration	-0.48***	0.07	0.75	0.02	910	109.43%
Miner Participates in Other Livelihood Activities	-0.5***	0.05	0.82	0.02	908	116.13%
Miner has License for Current Site	-0.06***	0.02	0.06***	0.02	916	30.42%
Miner believes permit affects tenure security	0.09	0.12	1.47***	0.08	812	10.73%
Number of mining conflicts	0.17	0.26	0.44***	0.05	906	9.48%
Miner Has Heard of KP	-0.02	0.03	0.1***	0.02	907	8.73%
Miner Has Heard of Trenching	-0.16	0.13	0.54***	0.06	895	31.67%
Frequency of Refilling Mining Pits	0.37	0.24	3.9***	0.21	902	24.62%
Miner Socio-Economic Status	-0.02	0.05	0.26***	0.04	916	4.75%

Several basic sample characteristics have significant differences between treatment and control groups in the household survey, including ethnicity, education, age of household head, participation by a household member in ASM, and labor availability within the household. With respect to ethnicity, the treatment area is more predominantly Soussou (91%, N=978), while the control group is Soussou (75%, N=808), Peuhl (11%, N=122) and Malinke (6%, N=67) – a significant difference that yields a high percent bias (53%) between the groups. With respect to education, households in the treatment group have significantly lower educational attainment than households in the control group—56% of treatment households (N=613) have no members with formal education, while only 40% of control households (N=440) have no formal education. This can be seen in Figure 7.1, where there is clustering around no education by members of the treatment group (red) and a greater spread in educational attainment, particularly secondary education, by members of the control group (blue), and this result also carries a high percent bias (50%). Household heads in the treatment group are slightly younger on average than household heads in the control group (46 years old sd=15.49 versus 49 years old sd=15.25). Finally, households in the treatment area have less labor availability than households in the

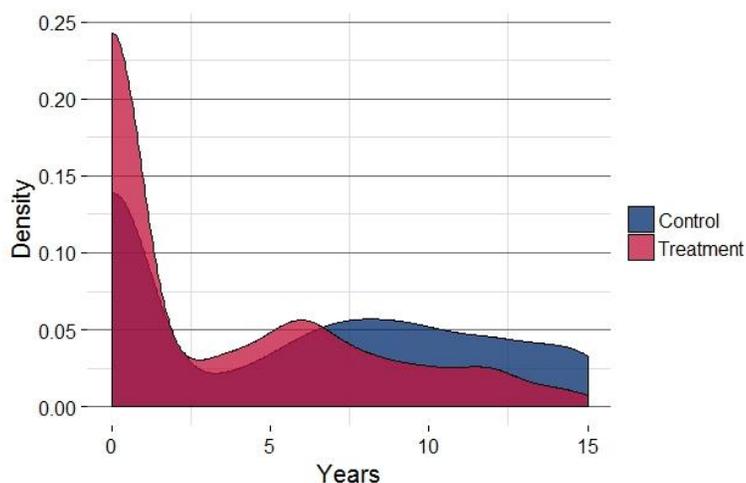


FIGURE 7.1. YEARS OF EDUCATION—TREATMENT VERSUS CONTROL

control area (3.18 sd=1.6 versus 3.45 sd=1.7), likely because they are generally smaller than households in the control area.

The miners surveyed also differ significantly between treatment and control groups on age, ethnicity, and migration. In contrast to the household survey results, in the ASM survey there is a sizeable difference between treatment and control groups in the proportion of miners who were born outside the village where they live currently. Only a quarter of miners in the control group (25%, N=94) were born elsewhere, but almost three quarters of miners in the treatment group (73%, N=390) were born in another village or another country.

Another unbalanced sample characteristic in the household survey is socioeconomic status. Households in the treatment group are generally poorer than households in the control group. After calculating an index of socioeconomic status for the whole sample, 29% of households in the treatment group (N=311) fall in the lowest quartile of assets and income and are classified as poor, but only 21% of households in the control group (N=229) are poor.

On the community level, villages in the treatment group are farther from a tarmac road than villages in the control group (17 km sd=9.3 versus 9 km sd=8.8), a difference that is significant at the 1% level. As shown in Figure 7.2, while most control villages are less than 10 km away from a road, treatment villages are often 30 km or more from a road. It is important to note that at this stage this distance data is self-reported by CLOs, but geo-spatial data was collected at baseline and calculated distance values can be used for endline analysis. Treatment and control areas are balanced on distance to the nearest market.

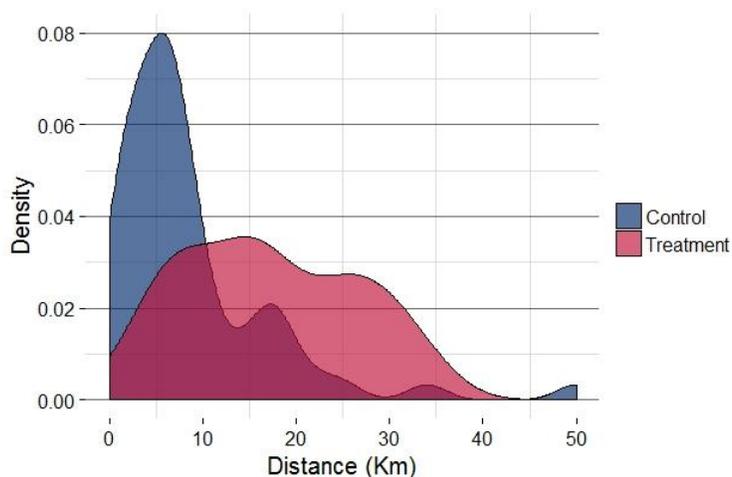


FIGURE 7.2. DISTANCE TO TARMAC ROAD— TREATMENT VERSUS CONTROL

Additionally, all of the main indicator variables of land use and management in the household survey are imbalanced. Planting rice is much more common in the treatment area than in the control area, since 92% of households in the treatment area (N=997) plant rice on at least one plot, but only 59% of households in the control area (N=645) grow rice (73% bias). Households that plant fruit trees are also unbalanced across treatment assignment. A similar percentage of households in the control area grow fruit trees as grow rice (59%, N=638), but only 30% of household in the treatment area (N=333) have trees on any plot (75% bias).

With respect to tenure security, respondents in the control group are significantly more likely to strongly agree that the boundaries of their farmland are clear and respected by people in their village (95% N=1,028 versus 82% N=855), though respondents from both assignment groups were equally unlikely to believe that their land boundaries were not respected (<1% in each group). This is pictured in Figure 7.3 below, where the greater concentration is observed around 1 (“Strongly agree”) in the control group and around 2 (“Agree”) in the treatment group. The percent bias for this variable is 41%, higher than the threshold of 25%. Finally, significantly more households experienced land disputes in the

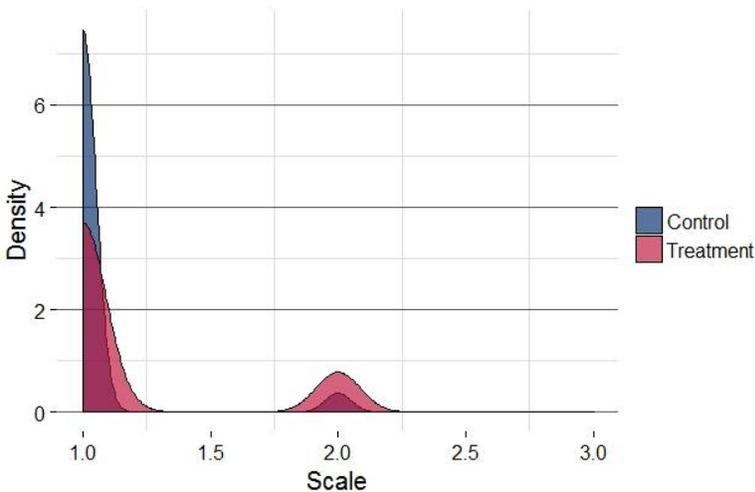


FIGURE 7.3. BOUNDARIES ARE RESPECTED—TREATMENT VERSUS CONTROL

(N=1032) agree that mining can have these negative environmental impacts, only 84% of treatment group respondents (N=913) agree with this statement (40% bias). Respondents in the treatment group are also more likely to ‘disagree’ or ‘strongly disagree’ than respondents in the control group (15% N=162 versus 3% N=39). This difference is represented in Figure 7.4 below. However, members of the treatment group are more likely to agree that restoring mined out sites is important (95% N=1011 versus 85% N=899, 35% bias). Additionally, slightly more respondents in the control group than the treatment group in the household survey have not heard of the KP (1,045 N=97% versus 1008 N=94%), but this variable is balanced in the ASM survey.

While miners in control areas are more likely to have mining permits (6% vs 0.7%), there are only 28 permits in the whole sample. Much more significant is the difference in other sources of livelihoods for miners in each area, with 82% of control miners (N=311) having another source of income, versus 32% (N=171) in the treatment group.

Notable balanced variables in the household survey include the number of outsiders, household involvement in ASM activities, socio-economic status, awareness of the Land Code, the number of local meetings about land held in each community, perceptions of fairness in land governance practices, and the overall perceived likelihood of government or investor expropriation of household land. In the ASM survey, balance between treatment and control groups is observed for education, beliefs about mining permits, number of mining conflicts, socioeconomic status, frequency of refilling pits, awareness of trenching methods, and awareness of KP.

control area (N=30) than in the treatment area (N=11), though 97% or more households in both areas experienced no land disputes at all. While this difference is statistically significant, the magnitude is quite small.

Some knowledge and attitudes about mining also very between the treatment and control areas. Respondents in the treatment group are less likely to believe strongly that mining activities can cause problems for rivers, forests and farmland. Whereas 96% of respondents in the control group

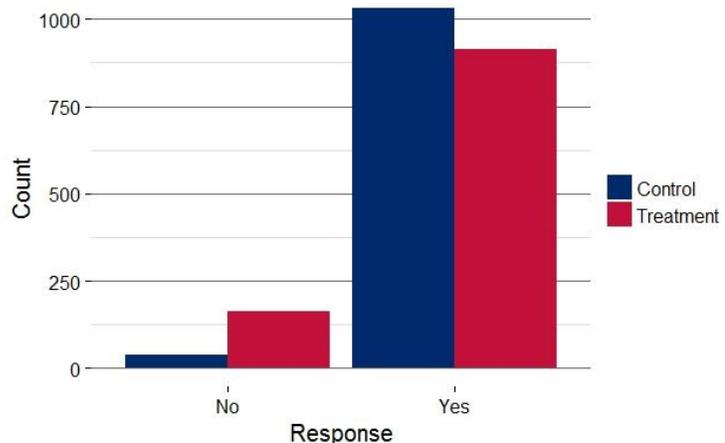


FIGURE 7.4. MINING CAN HARM THE ENVIRONMENT—TREATMENT VERSUS CONTROL

Going forward, matching techniques will be explored during pre-analysis (forthcoming) to address the detected imbalance and bias between treatment and control groups in the household survey. The imbalance and bias detected in the ASM survey is less concerning because this is a qualitative source of data: it is not a panel and will not be conducted using probability based sampling. Furthermore, analysis of the CLO surveys will be conducted bearing in mind that treatment and control groups differ in some important respects.

SUBGROUP ANALYSIS

Regressions⁴⁶ were also run to look for significant differences for members of important subgroups on key sample characteristics and indicators from the household survey, controlling for standard errors.

GENDER OF HOUSEHOLD HEAD

As shown in Table 7.4, female-headed households differ significantly from male-headed households on 6 of 18 main sample characteristic and indicator variables. Female-headed households have lower labor availability (2.9 sd=1.7 versus 3.3 sd=1.6). These households also have lower rates of participation in ASM (3% N=11 versus 7% N=521) and planting rice plots (50% N=57 versus 79% N=1,585). Household heads are of the Soussou ethnicity at lower rates (68% N=75 versus 83% N=1690), likely because of women traveling into the area from elsewhere for marriage. Finally, they have lower awareness of the KP (2% N=2 versus 5% N=102) and the Land Code (2% N=2 versus 7% N=136).

TABLE 7.3. MINER SURVEY BALANCE ANALYSIS

	Female-Headed Households		Constant		Number of Observations	% Bias
	Variable Estimate	Variable SE	Constant Estimate	Constant SE		
Labor Availability	-0.47***	0.15	3.34***	0.07	2165	27.76%
Ethnicity	-0.58*	0.35	4.74***	0.09	2114	55.11%
Highest Level of Education by Household	0.74	0.55	4.31***	0.33	2163	14.73%
Involved in ASM	-0.16***	0.04	0.22	0.03	2165	46.99%
Number of Rice Plots by Household	-0.38***	0.07	0.91	0.04	2124	67.23%
Number of Plots with Trees by Household	-0.06	0.09	0.61***	0.05	2079	8.07%
Number of Irrigated Plots by Household	0.15	0.13	0.45***	0.05	1773	16.4%
Boundaries Respected	0.02	0.05	1.11***	0.02	2124	7.14%
Likelihood of Government Expropriation	0.16	0.19	1.38***	0.06	2124	17.82%
Experienced Land Dispute	0.01	0.02	0.02***	0	2125	4.83%
Community has Meetings about Land	-0.01	0.03	0.11***	0.01	2165	3.22%
Land Governance Index	0.01	0.01	1.02***	0	1933	4%
Mining can Harm Environment	0.03	0.03	0.9***	0.01	2146	9.26%
Restoring Mined out Sites is Important	-0.03	0.04	0.9***	0.01	2126	10.61%
Socio-Economic Status	-0.03	0.04	0.25***	0.02	2165	7.98%
Household can send all children to school	-0.04	0.05	0.43***	0.02	2068	7.68%
Heard of KP	-0.04***	0.01	0.05	0.01	2157	24.74%
Heard of Land Law	-0.06***	0.01	0.07	0.01	1974	32.4%

⁴⁶ Fixed effects linear models were run to control for village fixed effects.

AGE OF HOUSEHOLD HEAD

Table 7.5 provides a breakdown of the subgroup analysis by age of household head. Youth-headed households differ from non-youth headed households on 10 key variables, which is more than any other subgroup. Youth-headed households have lower labor availability (2.7 sd=1.1 versus 3.6 sd=1.7), likely because they have younger families. In terms of ethnicity, they are more likely to be Soussou (86% N=522 versus 80% N=1,239). Youth-headed households are also more likely to have no members with formal education (54% N=330 versus 46% N=712), and they have higher rates of participation in ASM (11% N=172 versus 6% N=360). Households with younger heads are more likely than households with older heads to be classified as poor (29% N=177 versus 23% N=363).

Youth-headed households plant fruit trees at a lower rate (43% N=247 versus 49% N=725) than non-youth headed households. They are less likely to indicate that their community holds meetings about land (8% N=51 versus 11% N=176), and they feel more negatively about respect for land boundaries in their communities (84% N=514 strongly agree that boundaries are respected, versus 88% N=1369). Youth-headed households are also less confident than their older counterparts that the government or an investor cannot expropriate their land (71% N=423 'strongly agree' versus 76% N=1168). Additionally, youth-headed households have lower awareness of the Land Code (4% N=25 versus 7% N=112).

TABLE 7.5. SUBGROUP ANALYSIS: AGE OF HOUSEHOLD HEAD

	Youth-Headed Households		Constant		Number of Observations	% Bias
	Variable Estimate	Variable SE	Constant Estimate	Constant SE		
Labor Availability	-0.89***	0.07	3.57***	0.07	2165	60.83%
Ethnicity	0.17*	0.1	4.66	0.12	2114	23.02%
Highest Level of Education by Household	-0.95***	0.28	4.62	0.37	2163	19.31%
Involved in ASM	0.06**	0.02	0.19	0.03	2165	14.64%
Number of Rice Plots by Household	0.04	0.03	0.87***	0.05	2124	6.17%
Number of Plots with Trees by Household	-0.13***	0.05	0.65	0.05	2079	17.81%
Number of Irrigated Plots by Household	-0.02	0.07	0.47***	0.06	1773	2.16%
Boundaries Respected	0.03*	0.02	1.11	0.03	2124	10.09%
Likelihood of Government Expropriation	0.07*	0.04	1.37	0.07	2124	8.32%
Experienced Land Dispute	0.01	0.01	0.02***	0	2125	4%
Community has Meetings about Land	-0.03*	0.02	0.11	0.02	2165	10.01%
Land Governance Index	0.01	0.01	1.02***	0.01	1933	4.08%
Mining can Harm Environment	-0.02	0.02	0.91***	0.01	2146	7.74%
Restoring Mined out Sites is Important	0	0.02	0.9***	0.01	2126	0.05%
Socio-Economic Status	0.06**	0.02	0.23	0.02	2165	12.78%
Household can send all children to school	0.02	0.03	0.43***	0.02	2068	3.72%
Heard of KP	0	0.01	0.05***	0.01	2157	1.57%
Heard of Land Law	-0.03**	0.01	0.08	0.01	1974	13.92%

SOCIOECONOMIC STATUS

Key differences for resource-constrained households are presented in Table 7.6. Poor households differ from other households on only two indicators. They are slightly more likely to have experienced a land dispute, but the sample size is so small overall that this is not a reliable measure. Poor households are significantly less likely to agree that mining can harm the environment (88% N=474 versus 91% N=1471).

TABLE 7.6. SUBGROUP ANALYSIS: SOCIOECONOMIC STATUS

	Poor Households		Constant		Number of Observations	% Bias
	Variable Estimate	Variable SE	Constant Estimate	Constant SE		
Labor Availability	0.01	0.1	3.32***	0.08	2165	0.58%
Ethnicity	-0.01	0.08	4.71***	0.12	2114	15.55%
Age of Household Head	-0.13	0.93	47.26***	0.58	1723	0.88%
Highest Level of Education by Household	-0.61	0.41	4.5***	0.39	2163	12.39%
Involved in ASM	-0.01	0.03	0.21***	0.03	2165	1.86%
Number of Rice Plots by Household	0.04	0.04	0.87***	0.05	2124	7.03%
Number of Plots with Trees by Household	-0.01	0.06	0.61***	0.05	2079	1.46%
Number of Irrigated Plots by Household	-0.01	0.07	0.46***	0.06	1773	0.7%
Boundaries Respected	-0.01	0.02	1.12***	0.03	2124	4.6%
Likelihood of Government Expropriation	-0.04	0.05	1.4***	0.07	2124	4.86%
Experienced Land Dispute	0.02*	0.01	0.02	0	2125	11.08%
Community has Meetings about Land	0	0.02	0.1***	0.01	2165	0.77%
Land Governance Index	0	0.01	1.02***	0.01	1933	1.51%
Mining can Harm Environment	-0.04**	0.02	0.92***	0.01	2146	13.17%
Restoring Mined out Sites is Important	-0.01	0.02	0.9***	0.01	2126	2.34%
Socio-Economic Status	NA	NA	NA	NA	NA	NA
Household can send all children to school	0	0.03	0.43***	0.02	2068	0.93%
Heard of KP	0	0.01	0.05***	0.01	2157	1.37%

POWER ANALYSIS

In this section, the power calculations are updated for the PRADD II IE by calculating the sample based intra class correlation (ICC) for a series of baseline indicators. Please refer to Annex II for the original calculations. The baseline PRADD II ICC on anticipated indicator variables was then used to determine a more accurate MDES for the study.

The evaluation has the scope to rigorously assess the program's impact on indicators measured at the household level. It does not have the power to identify community-impacts measured only at the village level, though qualitative methods will be used to investigate indicators measured only at the village level.

Overall, the ICC for PRADD II household indicators ranges from 0.01 to 0.27 and has an average of 0.11. Given the sample size (N=2165) and community number of (~100), the MDES is updated using the new ICC calculations and then use the new MDES to determine the study's ability to detect change across the indicators below. For some variables actual power appears to be better than expected power, but the MDES calculated from baseline data falls within or below the expected range of 0.27–0.45.

The original MDES calculations in the Design Report represent valid estimates, and the research team is confident in the power of the study to detect policy relevant effects. In particular, the detectable treatment effect is estimated in Table 7.7 below for key baseline indicators. The ICC for village clusters, mean (μ), and standard deviation (σ) are also included below. Depending on the indicator, the study can detect a range from 9% to 41%.⁴⁷ For example, the study can detect a change of about 25% in knowledge and awareness of policy and laws like the Kimberley Process and the Land Code (25% and 23%, respectively). The evaluation pre-analysis plan (forthcoming) will supplement these results and provide estimated detectable changes by outcome.

TABLE 7.7. POWER ANALYSIS SUMMARY

Variables	μ	%	σ	ICC	MDES	Estimated detectable effect for PRADD	
						Point Change ⁴⁸	Percent Change
Plants Trees on Any Plots	NA	44.85%	0.50	0.27	0.41	0.20	41%
Irrigates Any Plots	NA	24.11%	0.43	0.18	0.35	0.15	35%
Boundaries are Respected (Scale 1-5) ⁴⁹	1.12	NA	0.36	0.10	0.28	0.10	9%
Likelihood of Government/Investor Expropriation (Scale 1-5) ⁵⁰	1.39	NA	0.83	0.14	0.32	0.27	19%
Experienced Land Dispute	NA	1.85%	0.13	0.01	0.19	0.03	19%
Community has Land Meetings	NA	12.01%	0.33	0.13	0.31	0.10	31%
Land Governance Index	1.16	NA	0.38	0.18	0.35	0.13	11%
Agrees Mining can Cause Environmental Harm (Binary)	1.46	NA	0.95	0.12	0.31	0.29	20%
Restoring Mined Out Sites is Important (Binary)	1.55	NA	0.85	0.21	0.37	0.31	20%
Has Heard of KP	NA	4.82%	0.21	0.06	0.25	0.05	25%
Has Heard of Land Code	NA	6.99%	0.26	0.05	0.23	0.06	23%

47 Please note that this analysis did not involve an attempt to remove outliers or reduce the standard deviations in any way.

48 This is the magnitude of change of continuous variables, in the units of the variable.

49 Where 1=Strongly Agree, 2=Agree and 3=Neutral or disagree.

50 Likert scale response to question, "I am confident that a government/investor cannot take any of my land without negotiation and fair compensation, where 1=Strongly Agree and 5=Strongly Disagree.

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ANNEX I—PRADD IE QUANTITATIVE SURVEY INSTRUMENTS

Please see the accompanying file titled "PRADD IE_Baseline Quantitative Instruments".

ANNEX II—PRADD IE DESIGN REPORT

Please see the accompanying file titled "PRADD IE_Baseline Design Report".

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