

SIT Graduate Institute/SIT Study Abroad

SIT Digital Collections

Independent Study Project (ISP) Collection

SIT Study Abroad

Spring 2023

Evaluating the On-Site Impacts of the Ambatovy Project through the Lens of Environmental Justice

Nick Karlik
SIT Study Abroad

Follow this and additional works at: https://digitalcollections.sit.edu/isp_collection



Part of the [African Studies Commons](#), [Development Studies Commons](#), [Environmental Indicators and Impact Assessment Commons](#), [Natural Resource Economics Commons](#), [Place and Environment Commons](#), and the [Sustainability Commons](#)

Recommended Citation

Karlik, Nick, "Evaluating the On-Site Impacts of the Ambatovy Project through the Lens of Environmental Justice" (2023). *Independent Study Project (ISP) Collection*. 3585.
https://digitalcollections.sit.edu/isp_collection/3585

This Unpublished Paper is brought to you for free and open access by the SIT Study Abroad at SIT Digital Collections. It has been accepted for inclusion in Independent Study Project (ISP) Collection by an authorized administrator of SIT Digital Collections. For more information, please contact digitalcollections@sit.edu.

Evaluating the On-Site Impacts of the Ambatovy Project through the Lens of Environmental Justice

Nick Karlik

SIT Madagascar Spring 2023

Abstract

In Madagascar, sustainable development has been established and maintained by dominant foreign actors to reconcile neoliberalism with globalized conceptions of environmental protection. The Ambatovy mining and refining project has emerged as a prominent example of this developmental mode; Ambatovy is the largest economic enterprise in the history of the country and one of the largest and most productive mining operations in the world, generating billions of dollars in revenue for a country that remains among the poorest in the world while offsetting its impact on endemic biodiversity and forest habitat through conservation initiatives. At the same time, the evaluative framework of environmental justice reveals that the project has largely failed to generate just and comprehensive development in mine-adjacent communities, and that Ambatovy's claims to sustainability marginalize collective wellbeing. Through qualitative interviews with local residents, we learn that economic benefits associated with mine's presence are difficult to access due to unaddressed structural poverty. Ambatovy has improved the quality of life of community members who have privileged access to employment, training, revenue, and direct aid, but the most immediate and wide reaching impact of the project on local residents is a cascade of environmental degradation; participants reported that the project has marginalized traditional livelihoods and created mass employment, driving crime and theft that threatens to destabilize community security. Residents continue to seek solutions from Ambatovy in the form of jobs and direct aid but these efforts are mediated by the significant power disparities that pervade local peoples' relationship with the project. Just futures for mine-adjacent communities may not be secured unless wholesale changes are to the larger paradigm of sustainable development.

Résumé

A Madagascar, les acteurs étrangers ont établi et maintenu le développement durable pour réconcilier le néolibéralisme et la conservation mondiale. Le projet de la mine d'Ambatovy se présente comme un modèle de ce paradigme; la plus grande entreprise dans l'histoire du pays et l'une des plus grandes et productives opérations minière du monde, elle génère milliards de dollars de revenus pour un pays qui s'identifie comme l'une des plus pauvres du monde. Parallèlement, Ambatovy compense sa déforestation et protège la biodiversité endémique en pratiquant les initiatives de conservation. Le cadre de la justice environnementale suggère, pour la plupart, que le projet n'a pas généré le développement juste et complet pour les communautés près du site de la mine, et que la réclamation du développement durable marginalise le bien-être

collectif. On a fait des entretiens qualitatifs avec les habitants locaux pour apprendre que les bénéfices du projet sont difficiles à obtenir à cause de la pauvreté structurelle persistante. Ambatovy a amélioré la qualité de la vie pour les membres de la communauté privilégié en leur donnant accès à l'emploi, la formation, le revenu, et d'aides directes, mais l'effet plus pertinent du projet sur les habitants locaux soit la dégradation environnementale en cascade; les participants ont indiqué que le projet a marginalisé la subsistance traditionnelle et a créé une grande population des chômeurs qui doivent voler pour survivre, une grande problème qui menace la sécurité de la communauté entiers. Les participants continuent à chercher des solutions qui viennent d'Ambatovy comme l'emploi et l'aide directe, mais ses efforts sont compliqués par la disparité du pouvoir qui définit les relations entre le projet et les peuples locaux. Pour réaliser des futurs justes, il est nécessaire de réinventer le développement durable.

History of Foreign Intervention: Neoliberalism, Conservation, and Sustainable Development

In 1980, the Madagascar government entered into an agreement with the International Monetary Fund (IMF), allowing it to reschedule or restructure its foreign debt (totalling more than \$1 billion USD) by accepting the terms of a stabilization program (Corson 2017 and Marcus 2004). Madagascar abandoned socialist economic policies in favor of neoliberalism: an ideology, economic theory, and political project that imposes market logic onto the disparate domains of human life, reconfiguring states, non-governmental organizations (NGOs), communities, and individuals into profit-driven economic actors (Feldman 2019). At the same time, the proliferation of media featuring Madagascar's endemic biodiversity—and its degradation due to deforestation—asserted the reality of an environmental crisis, and the necessity of international intervention; foreign scientists and conservationists also began working with Malagasy officials (Corson 2017). The emergence of Sustainable Development discourse in global environmental politics promised to provide a framework to address these problems without compromising economic growth.

In 1987, the World Bank began incorporating environmental management into development intervention, achieved through the creation of a National Environmental Action Plan (NEAP) for borrowing countries (Corson 2017). In Madagascar, the NEAP presented an opportunity for concerned international actors to address the environmental crisis and for the Malagasy government to attract foreign exchange in the context of IMF restructuring (Corson 2017). These same dynamics facilitated and legitimized non-state actors' influence over NEAP negotiations; when tensions arose between Malagasy stakeholders' interests in development and foreign aid donors' interests in conservation, the power and leverage of the latter dominated the former (Corson 2017). Since its implementation in 1990, Madagascar's NEAP has successfully reduced deforestation rates, improved soil fertility, and mainstreamed environmental management into national policymaking and education, but the country remains among the poorest and least economically developed in the world, beset with significant social and political

problems (Mercier 2006). The World Bank has continually encouraged Madagascar to accept Foreign Direct Investment (FDI) in exporting industries that can promote economic growth while preserving biodiversity. Realizing that corporate engagement with sustainability was necessary for obtaining a social license to operate, a consortium of multinational mining companies organized the Global Mining Initiative (GMI) in 1999 to rebrand the industry as a vehicle for sustainable development (Seagle 2012). The same year, Madagascar adopted a new mining policy (law No. 99-022) with the goal of increasing productivity, withdrawing state involvement in mining operations, and empowering the industry to become an agent of regional development (Sarrasin 2006).

Case Study: The Ambatovy Project

The Ambatovy project was launched as a joint-venture nickel and cobalt mining and refining project between three foreign-based enterprises: Sumitomo Corporation (Japan) KORES (Korea), and Sherritt International (Canada). At \$6.9 billion USD, Ambatovy is the largest ever foreign investment in Madagascar, accounting for 35% of total FDI in the country between 2006 and 2012 (World Bank 2014). In operation since 2012, Ambatovy has become one of the largest and most productive nickel mining facilities in the world, with an annual capacity of 60,000 tons (African Development Bank Group 2023). Today, raw nickel is one of the most important economic exports in Madagascar, with an annual value of \$169 million USD (Observatory of Economic Complexity 2023). Having celebrated its 10-year anniversary of nickel production in 2022, the project claims to have “significantly contributed to the economic and social development in its host regions as well as at the national level, created thousands of direct and indirect jobs, supported local businesses, and trained thousands of Malagasy people.”

Project construction, including at the mine site and along a 220 km pipeline that carries slurry to the refinery for processing and export, has cleared an estimated 2065 ha of land in the highly biodiverse and highly threatened rain forests of east and central Madagascar (Bidaud et al. 2017). To compensate for this loss, Ambatovy launched the Business and Biodiversity Offset Program (BBOP) in collaboration with NGO Conservation International “to deliver no net loss and preferably a net gain of biodiversity,” (Bidaud et al. 2017) by funding reforestation and forest protection elsewhere in the region. Initially adopted on a voluntary basis in high-income countries, biodiversity offsets are increasingly being incorporated into legal frameworks in low-income countries across the Global South in pursuit of sustainable development (Bidaud et al. 2018).

The Ambatovy mining and refining project operates amidst Madagascar’s ongoing development struggles. 81% of Malagasy people earn less than \$2.15 USD/day, the international poverty line (World Bank 2012). The communities located near the Ambatovy mine site are also very poor; A 2017 household survey of poverty and livelihoods in the Ambohibary commune found that access to education, electricity, and potable water is limited. Most residents are rice farmers and 85% of respondents reported that they collected forest resources (wood and

construction materials, medicinal plants, wild fish and game) for subsistence and for sale (Bidaud et al.). In this context, community development has been integrated into the project; Ambatovy created a \$25 million USD Social Investment Fund to fund community infrastructure projects, and provide material donations and agricultural training to community members living near the mine site, the refining plant, and newly established protected areas.

Tontolo Iainana and Environmental Justice

To date, research has focused on understanding the environmental and social impacts—often independently—of the project’s conservation efforts and biodiversity offset program rather than the project in its entirety (See Bidaud et al. 2017, Devenish et al. 2022). I argue that this focus may fail to capture the comprehensive impacts of Ambatovy’s presence on mine-adjacent communities, and I attempt to overcome these limitations by conducting my research through the framework of Environmental Justice (EJ).

The EJ movement was born in the United States in the 1980s when a national coalition of local activists—primarily Black and poor community leaders—organized to fight against their overexposure to hazardous waste, toxics, and extractive industry, a material consequence of long-standing systemic racism (Bullard 2005). In defense of their health and wellbeing, EJ leaders redefined the environment to include the places where people live, work, and play, asserting their right to equal protection and preservation (The Principles of Environmental Justice, 1991). The movement empowered marginalized peoples by recognizing the legitimacy of their situated knowledge and lived experiences; in the context of rapid and uneven neoliberal development, especially in low-income countries across the Global South, EJ has expanded globally, and its principles have been adopted by leaders around the world to secure justice for their communities.

Chung (2018) argues that land-water should be considered as a coupled resource in recognition of the fact that they are co-constructed through the lived experiences of local agriculturists: “land and water are one and the same; neither has meaning without the other,” (7). Expanding upon this insight, EJ demonstrates how human bodies are also environmental sites, connected in a complex ecology with the land-water that sustains them and is sustained by them. Such continuities permeate Malagasy ontologies of nature and the environment; the Malgasy name for these concepts, *tontolo iainana*, translates as ‘the world in which we live’ (Evers and Seagle 2012). In rural Madagascar, the environment is more than just a place that provides food and livelihood— it is a comprehensive landscape through which cultural knowledge is exchanged between living inhabitants and their ancestors. These relationships are foundational to *fomba gasy*, a concept that encompasses Malagasy ontology, practices, and beliefs (Evers and Seagle 2012). Due to language barriers and translation considerations, I divided the themes of land, water, livelihood, health, and community relations into separate interview questions. Despite these methodological limitations, participants were able to express the deep interconnections between these issues in the context of the Ambatovy mining project. I strive to privilege their

perspectives in my analysis by reintegrating these topics within a more comprehensive understanding of the environment.

Research Site



Figure 1: The Ambatovy mine site (at right) is located 13 km northeast of Moramanga, in the rural commune of Ambohibary. Interviews were conducted over a two week period in April 2023 with adult residents from the nearby villages (<5km) of Ampitambe, Ambohinierenana, Ankazondandy, and Ambohitranivo.

Data Collection

We first conducted semi-structured interviews with key community informants: *tangalamena* (village elders), religious leaders, and representatives from environmental protection and social development organizations. All interviews followed a standardized question set (Appendix A) that I prepared in English and French and Ando Andrianina Ramanantsoa translated into Malagasy. Ando conducted all interviews in Malagasy—the native language of the participants. We asked informants to explain how their community has changed since the start of the project, the social and environmental impacts of the mine on the community, how they work to resolve conflicts associated with the mine’s presence, and how they imagine an ideal relationship with Ambatovy in the future.

Individual interview questions were formulated based on the issues identified in informant responses. Participants were recruited through random sampling and opportunity sampling methods, but male participants were over selected in an effort to achieve gender parity in the study. We first asked participants to explain how the presence of the mine has affected their life and afterwards asked them whether or not they had experienced specific impacts related

to the project to obtain both qualitative and quantitative response data. We also asked participants to imagine an ideal relationship with Ambatovy and how this relationship might be realized.

We conducted an official interview with representatives from Ambatovy Society—an organization that was created by the project to manage social relations and administer SIF funds—and anonymous interviews with Ambatovy employees. We asked how the project balances its mining activities with the responsibility to protect local environments and support the needs of local communities—specifically those articulated by participants during individual interviews.

Data Analysis

Interviews with individual participants were recorded digitally and translated afterwards into French and English notes. Conducting qualitative research through an interpreter poses significant challenges because cultural concepts are not easily translatable (Cormier 2018). To account for this issue, we focused on conceptual rather than lexical understanding, emphasizing the articulation of participants' ideas over their words. For Question 1, I identified commonalities across participant responses and organized them into thematic word clouds to visualize the relative prominence of positive and negative impacts of the mine (Figure 2). The word clouds should be interpreted as multiscalar representations, because we did not ask participants to specify whether they have experienced these impacts on personal, familial, or community level. Each unique response is represented once in the figure, and for every additional occurrence of a response, I increased the font size of the text by 2 points. For example, one participant cited “Training” as a positive impact while nine cited “Revenue”; the former response is represented in size 14 font and the latter in size 30 font. The same methodology was used to create a thematic word cloud for Question 3, visualizing participants' proposals to improve their relationship with the mine (Figure 2). Environmental Justice simultaneously commits itself to the principles of popular democracy and “indispensability”, articulated by scholar David Pellow as the idea that “excluded, marginalized, and othered populations, beings, and things—both human and more-than-human—must be viewed not as expendable but rather as *indispensable* to our collective futures,” (2016, p. 231). To the extent that minority opinions are excluded and marginalized in democratic majorities, indispensability may be difficult to realize in these contexts, creating an unresolvable tension. Identifying, organizing, and summarizing qualitative interview data is an inherently representative process whose just execution is challenged by this tension. As a methodology, word clouds do not produce easily interpretable quantitative findings, but they are able to represent a response majority without marginalizing minorities, making them useful analytical tools within the framework of Environmental Justice.

Participant responses to Question 3 were coded as “Yes”, “No”, or “No Response” for each of the 12 specified impacts and entered into Google Sheets to generate a proportional stacked bar chart (Figure 3). Participants often elaborated upon the closed-response structure of the question, and while these details are not represented in Figure 3, I use qualitative response data throughout my discussion to contextualize quantitative findings.

Ethical Considerations

This research was approved by the School for International Training (SIT) Study Abroad Program through a Local Review Board. The study, including its goals, guiding research questions, and the manner in which informant responses were to be analyzed, were described to interviewees prior to receiving their consent to participate. Participants were verbally informed before the start of each interview that they were free to remain anonymous throughout the duration of the study, and that they could end the interview and/or withdraw their responses from the study at any point and for any reason. Interviewees were not monetarily or materially compensated for their participation; study methods were designed to minimize time and energy burdens on participants.

Positionality

In the field of Environmental Justice, “who gets a voice, and how they decide is the best way to raise it, are as important... as the content they reveal,” (Stewart 2023, p.7). As an American researcher working in predominantly non-English-speaking communities, my language constitutes a form of power that must be reckoned with in the study because the very act of translation risks erasing linguistically and culturally-situated concepts (Cormier 2018). For this reason, I have not attempted to present participant responses in the form of direct “quotations” or “transcriptions”. While I have strived to represent interviewees’ perspectives as faithfully as possible, I recognize that my own linguistic and cultural biases inevitably permeate the results of this study. This fact is essential to acknowledge in any qualitative study that employs translation, but especially so in one concerned with questions of justice in the context of foreign intervention. I argue that just futures cannot be achieved in this case study without making wholesale changes to the larger political, economic, and social realities that contextualize the project. The same processes that have enabled Ambatovy to function as a comprehensive developmental force in mine-adjacent villages empower researchers like myself to study its impacts, despite the limitations of our positionality; subsuming human progress under a universal market logic, neoliberalism privileges the globalized, institutional-acquired knowledge of foreign actors over the situated expertise of local people. All academic research is embedded in this context, and my study benefits directly from it. I recognize that the power I access through my personal identities may be a vessel for injustice in this study, but I hope that it can also amplify the inherently legitimate and systematically marginalized perspectives of village residents. I seek to contextualize and corroborate their experiences so that they may be more easily recognized by the apparatus of power in which their wellbeing is currently vested.

Results

We conducted individual interviews with 44 village residents: 14 from Ampitambe, 11 from Ambohinierenana, 13 from Ankazondandy, and 6 from Ambohitranivo. 24 participants identified as women and 20 identified as men, ranging in age from 20 to 88 years old (median age 38). 77% of participants identified as farmers and/or agriculturalists, and 16% reported working in the service sector, primarily as vendors and shopkeepers.

Participant responses to Question 1 are visualized in Figure 2. 33% of respondents said that they had not experienced any positive effects related to the mine's presence in their communities; 26% of respondents cited donations and compensation and 21% cited project revenue, primarily in the form of increased sales for local businesses. Participants experienced a greater number and diversity of negative effects; the most commonly cited problems were agricultural degradation and water access, reported by 23% of respondents. 19% of respondents cited a lack of local recruitment.

Participant responses to Questions 2 and 3 are depicted in Figures 3 and 4. For Question 4 (Figure 5), 68% of respondents expressed that Ambatovy must prioritize local recruitment to improve its relationship with local people. 34% of respondents requested increased donations and compensation from the project and 20% cited improved communication between the company and the community.



Figure 2: How has the presence of the mine affected your life? What positive and/or negative impacts have you experienced? More frequent responses appear more prominently

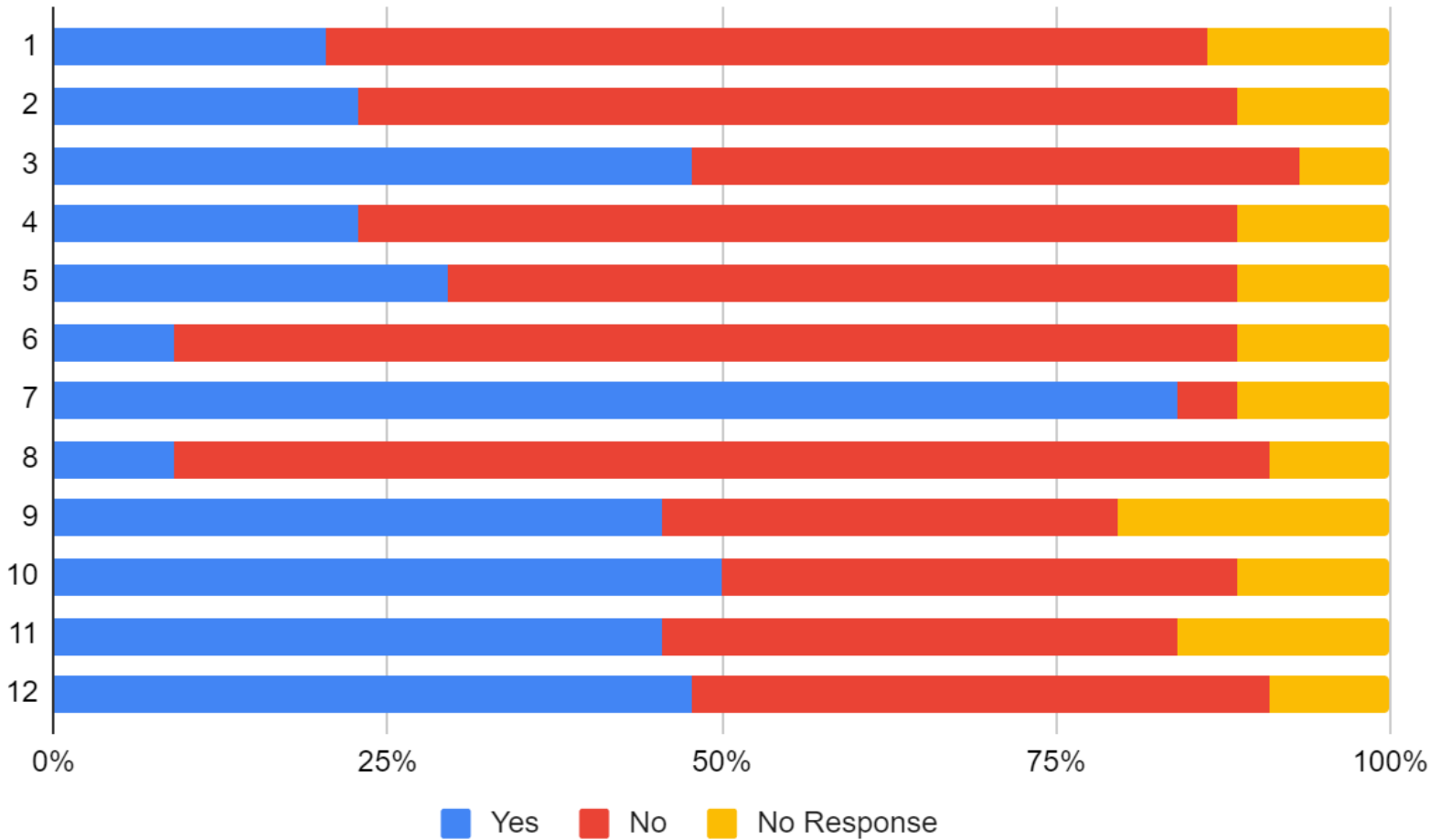


Figure 3: Have you personally experienced these impacts related to the Ambatovy project?

Impact	Response Rate	Yes	No
Employment and/or Business Opportunities	86.4%	23.7%	76.3%
Professional Training	88.6%	25.6%	74.4%
Donations, and/or Compensation	93.2%	51.2%	48.8%
Revenue from Income-Generating Activities	88.6%	25.6%	74.4%
Use of Community Infrastructure	88.6%	33.3%	66.7%
Property Theft	88.6%	7.7%	92.3%
Loss of Access and/or Difficulty Accessing Forest Resources	88.6%	94.9%	5.1%
Loss of Access and/or Difficulty Accessing Water	90.9%	10%	90%
Reduction in Agricultural Yields	79.5%	57.1%	42.9%
Health Issues	88.6%	56.4%	43.6%
Difficulty Obtaining Compensation and/or Insufficient Compensation	84.1%	54.1%	45.9%
Familial and/or Community Conflict	90.9%	53%	47%

Figure 4: Have you personally experienced these impacts related to the Ambatovy Project?

1. Employment and/or business opportunities
2. Professional training
3. Compensation, donations, or gifts from Ambatovy (money, land, materials, resources)
4. Revenue from development projects and/or income generating activities
5. Use of public infrastructures financed by Ambatovy (marketplace, CSB, public schools, soccer field, roads, wells)
6. Theft or damage of property
7. Loss of access or difficulty accessing forest resources
8. Loss of access or difficulty accessing potable water
9. Reduction in agricultural yields
10. Health problems
11. Difficulty obtaining compensation and/or insufficient compensation from Ambatovy
12. Familial and/or community conflicts



Employment and/or Business Opportunities

Ambatovy representatives claim that the project has generated widespread economic benefits in Moramanga and Tamatava that extend beyond direct employment of local community members. The ongoing purchase of goods and services needed to support their day-to-day operations provides contract employment and revenue to local businesses and cultivators. A portion of the revenue generated from the Ambatovy project is also redistributed among the five communes in which it operates (Moramanga, Andasibe, Morarano, Ambatovola, and Ambohibary) to fund community development projects. Maiavy, from Ankazondandy, suggested that while local villages have received revenue from the Ambatovy project, most of this money is kept by the state. According to the African Development Bank Group, Ambatovy accounts for 32% of the country's foreign exchange earnings.

Of the nine participants who have seen increased employment and/or business opportunities because of the mine's presence (24% of respondents), four of them work in the service sector—as vendors, shopkeepers, cleaners, and hotel managers. In Ambohierena, Salohy explained that when Ambatovy employees are paid at the end of each month, they spend their money in local shops and hotels, reliably boosting her sales. Ankazondandy resident Esperance also reported that her bungalow rental sees increased business at the end of each month from customers who work for the mine.

Among respondents who self-identified as farmers or agriculturalists, 17% responded yes to this question. Ankazondandy resident Elido explained that he had previously worked for Madacan (a Tamatava-based business that provides industrial goods and services to the mining industry) before returning to farming. Farmers Sabine (Ambohinierenana) and Noro (Ampitmabe) said that Ambatovy buys local agricultural products, generating revenue within their villages, but both of them suggested that the company should do more in this regard to support local farmers; a majority of respondents, especially primary producers, have not seen these benefits. Widespread access to the indirect employment and business opportunities created by Ambatovy may be mediated by the larger context of economic development, meaning that rural communities composed of farmers and agriculturalists—whose work has less to offer to the mine and its employees than the service sector—are more likely to be locked out.

Training and Revenue from Income Generating Activities

Ambatovy Society (SA: Société Ambatovy) reports that the company has supplied professional and agricultural training to some six thousand individuals during the past three years through its collaboration with the Regional Direction of Agriculture and Breeding (DRAE: la Direction Régionale de l'Agriculture et L'Élevage). In Moramanga and Tomava, SA collaborates with 60 different local associations to provide training to community members and establish income generating activities.

Ten participants (26% of respondents) explained that they have received agricultural, livestock and conservation training through Ambatovy-funded projects; ten participants also reported seeing the benefits of revenue from income-generating activities, but only four answered yes to both questions, suggesting that training does not always produce immediate financial benefits for recipients. In Ampitambe, farmer and agriculturist Nirintsoa received 40 chickens and training in chicken rearing through her participation in a project funded by SIF. She also explained that the project did not provide feed to sustain them, requiring her to cover these expenses out of pocket; Nirintsoa is still working to generate income from her efforts. Hugues, Ampitambe resident and member of the Local Base Community (VOI: Vondron'Olona Ifotony) has received training as a forest patrol agent, but this a volunteer position from which he does not receive income. VOI's conservation activities also involve the management of a community tree nursery, established in collaboration with Ambatovy. This initiative provides training to local people who work in the nursery and revenue to the community—Ambatovy purchases the juvenile trees to plant in protected zones and rehabilitated forest areas. Some informants and respondents expressed frustration with the channels through which Ambatovy provides training and opportunities to participate in income-generating activities. Certain associations may receive more or preferential opportunities based on their relationship with SA, and the majority of community members who are not association members have reduced access to these benefits altogether. Some of the training that Ambatovy offers takes the form of compensation rather than a means of generating income, as is the case for farmers who have been relocated from their land to accommodate the mine site and its infrastructure.

Of the ten respondents who reported seeing the benefits of revenue from income-generating activities, seven were male, despite the fact that men were slightly underrepresented among all participants (45%) in this study. In a study on gender performance gaps among informal entrepreneurs in Madagascar, Nordman and Vaillant (2017) found that female-owned businesses produce 28% less value-added than their male counterparts. Gender norms dictate that Malagasy women perform a disproportionate share of household labor, forcing them to combine their market and domestic activities in ways that limit the profitability of their enterprises. More data is needed to test this hypothesis in the context of this case study.

Donations and Compensation

In its Environmental Management and Social Development Plan (PGEDS: Plan de Gestion Environnementale et Développement Sociale), Ambatovy outlines the objective to minimize environmental destruction and community disruption caused by its activities, and to provide fair and sufficient compensation to affected populations—including the human and ecological communities nearest to the mine site. Ambatovy voluntarily supports social development by donating feed, seed, livestock, and equipment to local communities through the SIF.

In my interview with the Ambatovy Society, they appeared to distinguish between the organization's provision of donations and compensation, using the former term to describe social

aid that is given freely and generally within the community, and reserving the latter for aid given to a targeted population that has been afflicted by the mine's activities—persons affected by the project (PAPs). In my interviews with village residents, they did not consistently recognize a distinction between donations and compensation, more often referring to them together as a unified category of aid. These semantic differences are important to acknowledge and respect to the extent that they may reflect a deeper difference in understanding concerning Ambatovy's relationship with mine-adjacent communities. In recognizing that PAPs deserve "compensation", the company implicitly suggests that other community members may not. By defining generalized social aid as "donations", Ambatovy insists upon a benevolent relationship between the mine and the surrounding communities. At the same time, by blurring the distinction between the "compensation" and "donations" that they receive, village residents seem to challenge the notion that certain community members among them deserve compensation while others do not. Participant responses suggest that most, if not all, village residents should be considered persons affected by the project, living and working in an environmental context that has been profoundly changed by the presence of the mine. For these reasons, I do not attempt to distinguish between the provision of donations and compensation in my analysis of participant responses.

Just over half of respondents (51%) have received Ambatovy donations in the form of materials such as school supplies, cookware, and household items, agricultural supplies such as seed, fertilizer, and livestock, and financial support through scholarships and pensions. Esperance, a single mother and resident of Ankazondandy, said that Ambatovy's financial support has been essential for her daughter's education; she is one of 40 local students to receive a scholarship of 1.6 million Ariary (\$364 USD) over the course of four years to attend middle school (6th to 3rd grade). Numerous informants and participants cited the benefits that their friends and family have received through employment with Ambatovy; according to Tangalamena Razanakolona, the COLAS program gives employees access to interest-free loans worth up to 15 million Ariary (\$3,416 USD) to construct new homes and improve their quality of life.

Of the 20 respondents who have received compensation from Ambatovy, 12 (60%) reported issues in accessing the full advantages of this aid. 8 respondents reported that the compensation they have received from Ambatovy is insufficient. Other respondents claimed that they waited months or years before receiving promised donations from the company. Ambohitranivo resident Velosoa remarked that Ambatovy promised significant benefits, including compensation, to local people at the start of the project, but that these benefits have mostly failed to materialize. As with training, donations from the Ambatovy Society are primarily distributed through collaborations with local associations, limiting non-members' access to aid. Representatives from Association Planète Verte (Green Planet) explained that this delivery system also facilitates corruption and inequality within the community by allowing association leaders to dictate how materials are distributed.

The most significant compensation issues reported by respondents concern relocated farmers (PAPs). Ambohitranivo resident Pastor Ratelo spoke extensively about these problems in

our interview. He owns 7 hectares of rice fields in a 50 hectare plot divided amongst 29 different families: Ambolomaro, located in the nearby village of Behontsa. The Ambatovy project constructed nearby drainage canals that eroded and flooded the fields with organic debris, and dams that restricted access to irrigation. He explained that the project uses large amounts of water to transport slurried ore from the mine site to the processing plant and refinery near Toamasina, via a 220 km pipeline. These infrastructures significantly degraded the Ambolomaro land; Pastor Ratelo and his fellow landholders entered into negotiations with Ambatovy to secure compensation, ultimately agreeing to have their fields relocated.

Ambatovy provided new plots to each of the 29 families, but this land proved to be sterile, unable to produce comparable yields without significant artificial inputs. As in Ambolomaro, the fields' productivity was also limited by water shortages related to dam construction. In response, the Ambolomaro farmers requested that the company rehabilitate their former, degraded plots while supplying them with rice to account for their losses. Ambatovy agreed to give 2 tons of rice per hectare per year to affected families until the Ambolomaro fields were rehabilitated; According to Pastor Ratelo, the last year that they received compensation was 2018. Ambatovy claimed that they had restored Ambolomaro to its baseline yield of 2 t/ha, but when the farmers returned to their fields, they found that the land was only producing an average of 200 kg of rice per hectare— 1/10th its original productivity.

The Ambolomaro families appealed to the National Office of the Environment (ONE: Office Nationale pour l'Environnement) and the Minister of Agriculture to reclaim compensation from Ambatovy, but the dispute has yet to be resolved. According to Pastor Ratelo, the situation has stalemated: Ambatovy refuses to resume compensation and Ambolomaro remains degraded. Discussions between the company and the relocated families have ceased completely.

Infrastructure

Ambatovy Society draws from the SIF to support infrastructure projects proposed by local authorities in the Ambohibary commune's annual work plan. Since the beginning of the project, Ambatovy has financed the construction of a community marketplace, a health center (CSB: Centre de Santé Base), a public school building, a soccer field, secondary roads, security posts, and two wells in the villages of Ampitambe, Ambohinierenana, Ankazondandy, and Ambohitranivo.

One third of all respondents reported that they use community infrastructure that has been funded by Ambatovy; 60% of respondents from the village of Ambohinierenana responded yes to this question, compared to 21% of respondents from the other three villages. It seems unlikely that this discrepancy reflects a real difference in infrastructure use between the villages. All four communities are demographically and socioeconomically similar and located in close proximity (< 1km) to each other, suggesting that residents in Ambohinierenana would be no more likely to use these infrastructures based on access advantages. On the contrary, Ambohinierenana is situated farther away from the marketplace and the health center than any other village. This

result may be explained by response variation in a small sample size. The same set of structured interview questions were used throughout the study in all four villages.

Several respondents explained that certain infrastructures funded by Ambatovy have become dysfunctional due to a lack of ongoing investment in the human and capital resources needed to maintain them. According to Ambohitranivo resident Velosoa, Ambatovy originally financed the construction of two wells for the four villages to address community concerns about water pollution and reduced water access, but they are no longer usable because of broken pump mechanisms. Kina, of Ambohierenana, reported that the market in Ampitambe has effectively been closed since the departure of its project manager. In the words of Ambohitranivo resident Rufin, there are no more customers, just vendors. Both Hugues (Ampitambe) and Ered (Ankazondandy) proposed that the soccer field would be more valuable to the community if Ambatovy paid for its rehabilitation and helped to organize tournaments and leagues to engage local, jobless youth. According to Robert, of Ankazondandy, Ambatovy promised to fund the construction of a new road connecting the four villages, but the work has yet to be completed.

Participant responses corroborate the fact that infrastructure loses its use-value without continual reinvestment and maintenance. Despite its contributions to development in mine-adjacent communities, Ambatovy appears reluctant to accept long term accountability in this relationship, limiting the potential benefits of its presence for local people.

Land-Water and Well-being

For residents of Ampitambe, Ambohinierenana, Ankazondady, and Ambohitranivo, the most prevalent impact of the mine's presence in their community has been the loss of access and/or increased difficulty in accessing forest resources; 95% of respondents in the study have experienced this issue, mostly due to entry and use restrictions in newly established protected areas. BBOP embraces the principle of no net loss, according to which environmental degradation at the mine site can be offset through proportionate conservation efforts elsewhere. In the Conservation Zone (CZ) directly adjacent to the mine site, Ambatovy has set aside two parcels of land with a combined area of approximately 300 ha; the CZ will not be mined (despite the presence of nickel here) and access to the forest is limited to the periphery (2023). Representatives from MIVOATRA and the local Women's Association explained that this disrupts the customs of the local people, who have historically used the forest to collect wood for cooking and construction, medicinal plants, and food sources such as fruit and fish. Ambatovy promotes conservation of these areas by collaborating with local organizations such as VOI to train forest patrol agents and host environmental education sessions in the villages.

Multiple respondents and informants expressed frustration that Ambatovy restricts community access to the forest while continuing to use these resources for their own activities and profit. The company sells forest resources to local community members, but representatives from the Young Intellectuals of Bezanozano Ampitambe (AJIBA) explained that most of the wood that they cut is moved outside of the commune. Ampitambe resident Voahangy believes

that Ammabtovy should be donating these resources, especially deforested wood, as the project continues to clear new land for mining. Esperance said that the company also prohibits local people from using its old and discarded materials—supposedly as a theft prevention measure. AJIBA noted that these policies may actually undermine Ambatovy’s conservation efforts—VOI members who do not receive aid from Ambatovy Society and are unable to use the company’s discarded materials often enter into protected areas to exploit the resources they have been trained to protect. Tangalamena Ravelonasy Rodin also noted that deforestation continues to occur within conservation zones due to dysfunction within VOI. These actions are not without risk— as Ampitambe resident Ferdinand pointed out, violators may face serious consequences if they are caught by state or company officials.

77% of study participants self-identified as farmers and/or agriculturists, and along with the forest, their fields form an essential part of the larger ecosocial landscapes that they inhabit. 57% of respondents reported that their agricultural yields have diminished as a result of Ambatovy project activities. Multiple respondents reported that deforestation and the construction of mine infrastructures has eroded the land, causing their rice paddies to be polluted with organic debris after heavy rains. This problem appears to be especially significant for farmers whose fields are adjacent to mine access roads. Three different farmers from Ambohitranio–Velosoa, Rufin, and Razanany—have seen their fields destroyed or degraded due to the erosion of route PK 5. Like Pastor Ratelo and other PAPs, they reported that they are no longer receiving compensation for their losses.

Local farmers also attributed yield reductions to climate change. Ravelonasy Rodin reported that rain is less plentiful than it used to be, causing problems for cultivators. A 2008 World Bank report found that annual rainfall in the central and eastern coastal regions of Madagascar has been steadily declining for decades. Harvey et al. (2014) found that smallholder farmers in Eastern Madagascar are experiencing more volatile rainfall and stronger cyclones. These climatic changes have made it difficult for farmers to optimize their planting schedules, reducing their potential yields. More intense and frequent storms, characterized by high winds and heavy rain, also cause crop failure. The effects of global climate change on local agriculture cannot be solely, or even mostly attributed to Ambatovy’s arrival in the area. However, it is plausible that deforestation at the mine site may intensify dry spells by disrupting the localized water recycling services provided by rainforest canopy (Zhang et al. 1996). Project infrastructure may also be exacerbating the effects of climate change on cultivators. Representatives from Green Planet explained that the project’s dams have diminished access to irrigation water by decreasing river volume. Ambatovy claims to minimize its strain on local resources by using water recycled from its tailings management facility to move ore slurry through the pipeline (citation needed) and by opening their dams during drought periods to help local farmers.

Water pollution (primarily due to erosion) was cited as one of the most pervasive environmental impacts related to Ambatovy’s presence, but a significant majority of respondents (90%) reported that they have not experienced issues accessing potable water. 13 different respondents, representing all four villages, specified that they are able to use individual and/or

community wells to meet these needs; the two wells originally financed by Ambatovy remain non-operational, but four new community wells were recently constructed with funding from the Catholic Church.

56% of respondents said that they have experienced health problems related to air, water, and soil pollution from mining activities. These include dysentery, malaria, influenza, and various respiratory issues. According to the company website, Ambatovy continuously monitors the physical environment to detect changes in air and water quality. The company has identified multiple sources of air particulate, including dust from heavy equipment, vehicle emissions, diesel generators, and the coal-fired power plant. They monitor groundwater from surrounding mine facilities, local rivers and watersheds, and surface water for contamination from sedimentation, suspended solids, and minerals such as magnesium and chromium. Ambatovy maintains that air and water quality at the mine site is in compliance with international standards. In my interview with the director of the Ampitambe CSB, I asked if the health center has seen health problems in the local community related to water pollution. They reported that as of 2019, the CSB had treated about 200 patients for skin problems related to river water exposure. The director emphasized that the cause of these issues is undetermined and that they have been mitigated by the recent construction of community wells.

Multiple village residents also reported experiencing stomach pains, hair loss, and vision problems—issues that may be indicative of micronutrient and protein deficiencies. Ambohitranivo resident Jean Baptiste believes that these health problems are connected to the destruction and degradation of local agriculture. Malnourishment is an ongoing, national issue; Madagascar has one of the highest rates of chronic malnutrition in the world and more than half of all Malagasy children experience health issues related to malnutrition (World Bank 2016). Nutrient poor white rice is the staple food in Madagascar and the foundation of all three meals for most Malagasy people; declining yields caused by global climate change, and local issues such as water access and water pollution may be exacerbating these larger health issues within the community.

The project's impacts on holistic health and wellbeing in the community have been uneven. Numerous respondents reported that the quality of life in the villages has improved since Ambatovy's arrival. In Ampitambe, Celine explained that her family's economic situation has improved since her husband began working for Ambatovy as a tree cutter. Esperance, Voahangy, and other service workers who have seen increased business related to the mine's presence explained that the entire community, not just Ambatovy employees, has benefited from economic development. Tanagalamena Ravelonasy Rodin has also been satisfied with the outcomes of the project; he received 350,000 Ariary (\$80 USD) and a land title in a company-owned plot known as Mahatsara 8.

Certain privileged community members—especially authority figures and company employees—have seen their quality of life improve because of Ambatovy. For many other residents however, these benefits have been inaccessible or inadequate. 53% of respondents reported that they have experienced familial and/or community conflicts related to Ambatovy's arrival, often arising from the unequal distribution of economic benefits. Male respondents were

twice as likely as female respondents to answer yes to this question (70% vs. 35%). Multiple respondents and informants said that growing economic inequality is creating social strife. The COLAs program has improved employees' quality of life by providing funds to build modern houses, but for residents that live in traditional dwellings, these developments only serve to magnify their relative poverty. Representatives from AJIBA explained that many Ambatovy workers splurge on food and alcohol after receiving their monthly pay, antagonizing unemployed residents with their lavish, public displays of consumption. In this context, Pastor Ratelo explained that unemployed residents, especially disaffected young men, are increasingly resorting to theft—one of the more commonly cited problems related to Ambatovy's presence in the community. Only three respondents (8%) reported being personally victimized; most theft targets company property rather than that of local residents, in particular diesel fuel and valuable metals. Pastor Ratelo has observed that these activities are becoming more organized and sophisticated; many thieves work in teams or "gangs" under the direction of a boss, carrying out their operations under the cover of night. According to Robert, these same men spend their days loitering in the villages rather than working in the fields.

For disaffected men, theft and gang membership promise economic and sociological benefits that have become harder to access in the context of the Ambatovy project. A company representative explained that two liters of stolen diesel fuel can be sold for more money (10,000 Ariary; \$2.31 USD) than the average farmer earns from working a day in the fields (6,000 Ariary; \$1.38). The financial incentives of theft may be even stronger for local residents whose crop production has declined due to erosion, water pollution, reduced water availability, and climate change. Organized crime, through gang membership, restores peer acceptance and social identity for individuals who have failed to fulfill their social roles (Boduszek and Hyland 2011). Throughout Madagascar, patriarchal gender norms define a man's social role as the responsibility to work and provide for his family, but this pressure may be even more acute in the mine-adjacent communities of Ampitambe, Ambohinierenana, Ankazondandy, and Ambohitranivo. Mining is a traditionally male-dominated industry whose workplace cultures are permeated by masculine values, enabling male mine workers to affirm their social roles as masculine providers through their employment status. In this light, Ambatovy employees' displays of conspicuous consumption can be understood as an assertion of successfully-realized masculinity. Local men are conditioned to feel unemployment as both an economic and a sociological failure, but they are increasingly unable to fulfill their social roles through alternative activities. Ambatovy is the only major enterprise and employer in these communities, and their presence is actively marginalizing traditional subsistence livelihoods based on rice agriculture and access to forest resources. One employee expressed that "revenge" is a primary reason for theft. Men who feel wronged, disempowered, and emasculated by their unemployment steal company property to compensate for the material and immaterial things that Ambatovy seems to have taken from them in the first place.

Despite its gendered dimensions, theft and gang formation has widespread effects on community wellbeing. Esperance explained that state police discriminate against local residents,

even though they are not primarily responsible for the increased crime. Maiavy pointed out that many new people have moved into the area since the start of the project, but most of them have been unable to secure long term employment with Ambatovy; lacking access to land, livelihood, and networks of care, many of these outsiders steal from the company to survive, and their presence has degraded the local community's larger relationship with law enforcement. Conflict between police and gangs has become increasingly violent in recent years. Pastor Ratelo reported that in 2018, five police officers were killed by a group of men attempting to steal company property, and that this incident has since destabilized security in the villages. One informant suggested that gang violence will continue to endanger residents even after the project's eventual completion. They explained that during the COVID-19 pandemic, when mine operations were curtailed in accordance with nationwide lockdown restrictions, crime rates jumped in the villages and many residents were victimized by theft. Some respondents expressed concern that these conflicts are becoming solidified through the degradation of community values. Hugues lamented how respect for tradition has declined among local youth in the context of mine-related economic development and crime. Numerous respondents believe that intercommunity cohesion and cooperation is the key to improving their relationship with the Ambatovy project.

Through their understanding of the environment as *tontolo iainana*, the world in which we live, respondents illuminated a complex cascade of environmental effects in their communities; the mine has marginalized traditional livelihoods by reducing access to the forest and to land-water, but most local residents are unable to access promised economic benefits such as employment and revenue, and the project has mostly failed to provide community members with comprehensive social aid and compensation. Enduring poverty and growing inequality has engendered theft and led to the formation of gangs, issues that threaten to destabilize community security and degrade community values.



Figure 5: How do you imagine an ideal relationship with Ambatovy and what should be done to realize this relationship? More frequent responses appear more prominently.

Just Futures

Moore and Milkoreit (2020) describe just futures as “the ability of individuals and groups to identify, assess, and pursue alternative possible futures... and collectively respond to major sustainability challenges rather than experience guided or forced change,” (1). The realization of just futures in this case study demands that Ambatovy take accountability for the ways that the project benefits from and perpetuates the injustices that contextualize their presence in mine-adjacent villages, but these efforts are challenged by the significant discrepancies that exist between the company and community perspectives on social development and environmental protection as well as the significant power disparities that pervade these relationships.

Several informants expressed that the local community’s relationship with Ambatovy is beset by a lack of mutual trust and respect, exemplified by the issue of local recruitment. Pastor Faly explained that these communication channels are inherently flawed because they fail to connect the people in power with the people in need; the company interfaces with a limited number of select residents, such as association members, whose concerns are not always

representative of the larger community. On the other side, Malagasy employees meet regularly with community leaders to discuss project impacts, but they do not have the ability to act upon the problems they encounter. One informant explained that foreign executives hold decision-making power in the company, but they are largely unaware of the situation on the ground.

68% of respondents expressed that Ambatovy must prioritize local recruitment to improve its relationship with local communities. Voahangy explained that local residents must overcome significant obstacles to even apply with the company; internet access is limited and expensive, forcing candidates to submit applications altogether, in mass emails. Pastor Family reported that the mine only recruits 5% of local men in Ampitambe, mostly for low-paying manual contract labor that requires little education or training. Biadaud et al. (2017) found that in sites where the Ambatovy biodiversity offset program is being implemented, including the commune of Ambohibary, 63% of people attended primary school and only 7% attended secondary school. For higher-paying positions that require technical training or post-secondary education, Ambatovy recruits candidates from other regions or outside of the country. These hiring practices have alienated unemployed residents, many of whom feel that the company should prioritize local candidates even when they don't have the same credentials as outsiders. Informants from Association Ezaka sy Fanrosona (Efforts and Advancement) expressed that the company sees village residents as thieves, untrustworthy and unsuitable for employment. Representatives from Association MTI, a local environmental protection organization, suggested that Ambatovy racially discriminates against local candidates.

In my interview with representatives from Ambatovy Society, I asked specifically what the company is doing to address these concerns. They explained that Ambatovy has adopted local recruitment as a core objective since the project's inception, and that the company uses flexible hiring practices to accommodate candidates with alternative education and work experiences. In anonymous conversations, Ambatovy employees expressed frustration that the mine has become a boogeyman for disaffected residents—responsible for everything from the common cold to global climate change—who would rather accept company handouts than work to improve their quality of life. Of course, a strong majority of respondents *do* want jobs, and in spite of the company's official endorsement of local candidates, many believe that they suffer discrimination during the hiring process. Company and community disagreement on the issue of local recruitment is indicative of the tensions that prohibit just development in the context of neoliberalism.

Neoliberalism celebrates economic actors who achieve prosperity and denigrates those who are unable to take responsibility for their own fate. Paradoxically, it imagines the poor as deficient and immoral individuals who can nonetheless escape poverty through the realization of some latent ability (Feldman 2019). These ideologies are clearly expressed through the reconfiguration of social welfare; neoliberals believe that income redistribution and the provisioning of essential social services entrenches poverty by disincentivizing people to work, creating unproductive and irresponsible citizens. Instead, the state and the private sector should

focus on facilitating poor peoples' market participation so that they can realize their own productive potential (Feldman 2019).

Ambatovy draws upon this logic to take credit for positive developments in mine-adjacent communities while distancing itself from the negative impacts associated with the project. Community members who are able to secure employment and improve their quality of life exemplify neoliberal welfare, wherein their individual success is enabled by the economic opportunities that Ambatovy has provided for them. When this developmental model fails, as it has for the majority of participants, Ambatovy can equally claim that unemployed residents are responsible for their own condition because they are unable to take advantage of available opportunities. In this way, they are able to delegitimize community members' valid concerns about the mine's impacts on their land-water and well-being by characterizing them as misplaced expressions of personal failure. By minimizing and individualizing the plight of poor people, neoliberal ideology effectively obscures the structural causes of poverty: macroeconomic policy, education access, and institutional racism.

Just and comprehensive community development is antithetical to neoliberalism because it is inherently unprofitable. To confront the structural causes of poverty is to neutralize the privileges that individual economic actors enjoy, privileges that drive market interactions and generate productivity. Representatives from Ambatovy Society implicitly acknowledge this reality; they emphasized that the primary goal of their project is economic profit, not social development, and that the aid they provide to local communities is voluntary, not obligatory. It may seem unfair or irrational to charge Ambatovy, a foreign-owned profit-driven enterprise, with the responsibility of being a public development organization, but this is exactly the goal of neoliberalism as implemented by the World Bank in Madagascar: to subsume societal progress under the logic of free market capitalism and replace the welfare state with economic actors who facilitate market interactions.

Study participants understand the environment to be a deeply interconnected ecosocial landscape, defined by peoples' relationships with the places where they live and work. In recognition of this holistic perspective, it is essential to consider together the social and environmental impacts of the Ambatovy project. At least discursively, the project has achieved this goal by adopting the principles of sustainable development, but in practice, the interests of residents in mine-adjacent villages have been marginalized by global conservation interests.

Devenish et al. (2022) reported that Ambatovy's biodiversity offset program is on-track to protect an area of rainforest equivalent to that which has been deforested at the mine site and along the pipeline route. In an interview with the Guardian, co-author Julia Jones emphasized the significance of these findings: "Offsetting is really hard. The company had to work really, really hard to achieve those biodiversity gains." Lead author Kate Devenish explained that this is "an encouraging result" but that "there remain important caveats," (2022). Newly established conservation zones limit local residents' access to forest resources, an issue cited by 95% of study respondents. 51% of study respondents have received compensation and donations from

Ambatovy to account for project impacts on their life and livelihood, but more than half of these participants reported problems associated with accessing the full benefits of this aid.

Seagle (2012) argues that the Rio Tinto/QMM ilmenite mine in Southeast Madagascar has formed corporate partnerships with international conservation NGOs to abstract the local impacts of the project through global commitments to sustainable development. Ambatovy has accomplished a similar feat through its collaboration with Conservation International. BBOP has prioritized forest protection and conservation within the same communes where deforestation has occurred, but project evaluators privilege the perspectives of the international conservation community over those of local residents. Evers and Seagle (2012) argue that the logic of offsetting is based upon the understanding of biodiversity as world heritage; humanity's metaphysical right to conserve Madagascar's endemic biodiversity trumps local residents' situated right to use the forest as a place to secure livelihood and cultural knowledge. A significant majority of participants have lost access to forest resources as a result of BBOP, but only two (5%) cited the benefits of conservation and environmental education in their communities. Likewise, Ambatovy Society representatives referenced international environmental policy to contextualize the success of BBOP, but they did not relate forest conservation to the experiences of local community members.

Sustainable development has failed to acknowledge, let alone address, the comprehensive environmental harms experienced by participants in this case study; on the contrary, this discourse more often frames subsistence farmers as perpetrators of environmental degradation. Small scale cultivation in Madagascar has traditionally taken the form of *tavy*—often called “slash and burn” agriculture. *Tavy* farmers set controlled fires to clear above-ground natural vegetation from a plot of land and introduce rich nutrients into the soil, allowing them to plant staple crops like rice and manioc. After several years of use the land is left fallow to regenerate and farmers shift cultivation to other plots (Seagle 2012). *Tavy* can be sustainable where there are low population densities and low land use pressures (Scales 2014), but fallow periods in Eastern Madagascar have shortened significantly in recent decades, accelerating deforestation and biodiversity loss (Styger et al. 2007). Global conservationists have identified *tavy* as the primary cause of this crisis (Seagle 2012). Madagascar's Environmental Action Plan suggested that the practice of *tavy* is indicative of Malagasy culture's larger ignorance about conservation and ecosystem fragility (Simsik 2002, World Bank 1988), thus asserting the necessity of responsible (foreign) intervention. Ambatovy employs the same narrative to contextualize environmental degradation and justify project initiatives such as BBOP: According to an internal publication, “Multiple awareness campaigns... do not seem to stop the spread of *tavy*. Deforestation is highly visible along the national road, RN 2, and is increasing at an alarming rate,” (Rakotoarisoa 2014, p. 22). This framing fails to acknowledge the colonial history of environmental degradation in Madagascar; almost three quarters of primary forest cover was cleared between 1895 and 1925 in pursuit of French economic development, at a time when population growth was slow and the practice of *tavy* was banned (Jarosz 1993). The French colonial state extracted Madagascar's rich natural resources for international markets while exacerbating social and economic inequality

through uneven internal development. This history endures in rural communities, where centuries of underinvestment in public infrastructure has entrenched poverty.

Ambatovy's claim to sustainability is consistent with neoliberal conceptions of social development and globalized notions of environmental protection, but it does not account for the emically-defined worldviews of mine-adjacent communities. Neocolonial conservationists' narrow imagination of the environment as a non-human landscape misconstrues the complex ecosocial interactions that define residents' relationship with the places where they live and work, thereby diminishing the comprehensive impacts of the mine on their lives and livelihoods. The developmental aid and compensation that Ambatovy provides to affected communities is filtered by neoliberalism, compelling local people to assume personal responsibility for their own well being despite the significant structural disadvantages that inhibit their ability to succeed in the market.

There are clear steps that Ambatovy could take to improve its relationship with the local community, but none of these changes would disrupt the larger political, economic, and social contexts that have established Amabatovy as the dominant developmental force in this region, endowed with the power to give and withhold aid as they see fit. There are few legal and social constraints in place to ensure that Ambatovy maintains this relationship when conflicts arise, and participant responses suggest that the project is already divesting itself from the local community. Numerous respondents reported that PAPs have stopped receiving compensation from the company even though their fields remain degraded by the mine's activities. Much of the infrastructure that Ambatovy financed at the beginning of the project is losing its use value for local residents without continual reinvestment and maintenance. The minimum support that Ambatovy must provide to mine-adjacent communities to keep its social and legal license to operate is inadequate to fund just and comprehensive development.

Participant responses suggest that Ambatovy's impact on local communities has thus far been more negative than positive, but a significant majority of them continue to imagine solutions within the framework of the project: employment, donations and compensation, improved communication. These contradictory realities epitomize the limited freedom of choice that defines the experiences of poor residents living in the shadow of the mine; for all of the problems it has created and exacerbated, participants recognize that their immediate well-being remains vested in Ambatovy. It is difficult to imagine durable and equitable futures in this case study without wholesale changes to the political, economic, and social realities that contextualize the relationship between the Ambatovy project and mine-adjacent communities.

Out of respect for the lived experiences of participants, it is nonetheless essential to identify immediate, realistic actions that can be taken to help them secure collective wellbeing. Ambatovy currently divides the work of social and environmental management into two separate organizations; in recognition of residents' more comprehensive understanding of the environment and its degradation due to the presence of the mine, the project could integrate the work of these two organizations. This would mean, for example, recognizing joblessness, theft, and community insecurity as an environmental issue that deserves the same respect and attention

as forest conservation. People want jobs, and while there is a realistic limit on the number of community members that the project can employ, Ambatovy must do a better job addressing the structural barriers—namely education and specialized training—that make local people less hireable candidates. Not only would these initiatives boost local recruitment, but they would also help local people succeed as economic actors outside of and beyond the context of the project when it ultimately ends. The success of all of these initiatives is dependent on improved communication between people in power and people in need. All residents, not just association leaders, should have easy and transparent access to company representatives to voice their concerns. Internally, Ambatovy needs to ensure that these concerns are heard by executive managers who have the power to act on them.

References

- Ambatovy (2022). *10 Years of Commitment to the Sustainable Development of Madagascar*. <https://ambatovy.com/10/>.
- Ambatovy (2023). *Offset Sites*. <https://ambatovy.com/en/sustainability/environment/offset-sites/>.
- Bidaud et al. (2017). The Sweet and the Bitter: Intertwined Positive and Negative Social Impacts of a Biodiversity Offset. *Conservation and Society*, 15(1), 1-13.
- Bidaud et al. (2018). The Local Costs of Biodiversity Offsets: Comparing Standards, Policy, and Practice. *Land Use Policy*, 77, 43-50.
- Boduszek and Hyland (2012). The Theoretical Model of Criminal Social Identity: Psycho-social Perspective. *International Journal of Criminology and Sociological Theory*, 4(1), 604-614.
- Bullard, R. (2005). *The Quest for Environmental Justice*. Sierra Club Books, San Francisco, CA.
- Chung, B. Y. (2018). The Grass Beneath: Conservation, AgroIndustrialization, and Land–Water Enclosures in Postcolonial Tanzania. *Annals of the American Association of Geography*, 1-17.
- Cormier, G. (2018). The Language Variable in Educational Research: an Exploration of Researcher Positionality, Translation, and Interpretation. *International Journal of Research & Method in Education*, 41(3), 328-41.
- Corson, C. (2017). A History of Conservation Politics in Madagascar. *Madagascar Conservation and Development*, 12(1), 1-12.
- Devenish et al. (2022). On Track to Achieve No Net Loss of Forest at Madagascar’s Biggest Mine. *Nature Sustainability*, 5(1), 498-508.
- Evers and Seagle. (2012). Stealing the sacred: Why ‘Global Heritage’ Discourse is Perceived as a Frontal Attack on Local Heritage Making in Madagascar. *Madagascar Conservation and Development*, 7(2), 97-106.
- Feldman, G. (2019). Neoliberalism and Poverty: An Unbreakable Relationship. In Bent Greve (Ed.), *Routledge International Handbook of Poverty* (1st ed.), 340-50.
- Greenfield, P. (2022). Is a Madagascar Mine the First to Offset its Destruction of the Rainforest?

- The Guardian*. <https://www.theguardian.com/environment/2022/mar/09/ambatovy-the-madagascan-mine-that-might-prove-carbon-offsetting-works-aoe>.
- Harvey et al. (2014). Extreme Vulnerability of Smallholder Farmers to Agricultural Risks and Climate Change in Madagascar. *Philosophical Transactions of the Royal Society B* 369(1639), 1-12.
- Jarosz, L. (1993). Defining and Explaining Tropical Deforestation: Shifting Cultivation and Population Growth in Colonial Madagascar (1896-1940). *Economic Geography*, 69(4), 366-79.
- Marcus, R. M. (2004). Policy Change in Madagascar: Populist Democracy or Neopatrimonialism by Another Name? *Institute for Security Studies*, 89, 1-20.
- Mercier, J-R. The Preparation of the National Environmental Action Plan (NEAP): Was it a False Start? *Madagascar Conservation and Development*, 1(1), 50-54.
- Moore and Milkoreit (2020). Imagination and Transformation to Sustainable and Just Futures. *Elementa: Science of the Anthropocene*, 8(1), 1-17.
- Nordman and Vaillant (2017). Inputs, Gender Roles or Sharing Norms? Assessing the Gender Performance Gap Among Informal Entrepreneurs in Madagascar. *Hal Open Science*.
- The Observatory of Economic Complexity (2023). *Madagascar (MDG) Exports, Imports, and Trade Partners*. <https://oec.world/en/profile/country/mdg/>.
- Pellow, D.N. (2016). Toward a Critical Environmental Justice Studies: Black Lives Matter as an Environmental Justice Challenge. *Du Bois Review: Social Science Research on Race*, 13(2), 1-16.
- Rakotoarisoa, J-A. (2014). A Look at Cultural Heritage: A Contribution to the Cultural History of the Eastern Region of Madagascar Archaeological Sites between Mangoro and Ivondro. Ambatovy, Moramanga, Madagascar.
- Sarrasin, B. (2006). The Mining Industry and the Regulatory Framework in Madagascar: Some Developmental and Environmental Issues. *Journal of Cleaner Production*, 14, 388-96.
- Scales, I. R. (2014). The Drivers of Deforestation and the Complexity of Land Use in Madagascar. In I. R. Scales (Ed.), *Conservation and Environmental Management in Madagascar, Earthscan Conservation and Development Series*, 105-125.
- Seagle, C.W. (2012). Inverting the Impacts: Mining, Conservation and Sustainability Claims Near the Rio Tinto/QMM Ilmenite Mine in Southeast Madagascar. *Journal of Peasant Studies*, 39(2), 447-477.
- Simsik, M. J. (2002). The Political Ecology of Biodiversity Conservation on the Malagasy Highlands. *GeoJournal*, 58, 233-42.
- Stewart, M (2023). Narrative, Place, and Environmental Justice. *Environmental History*, 28(1), 4-13.
- Styger et al. (2007). Influence of Slash-and-Burn Farming Practices on Fallow Succession and Land Degradation in the Rainforest Region of Madagascar. *Agriculture, Ecosystems and Environment*, 119, 257–269.
- World Bank. 2001 (updated in 2014). Involuntary resettlement. In OP 4.12.

- <http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTOPMANUAL/0,,contentMDK:20064610~menuPK:64701637~pagePK:64709096~piPK:64709108~theSite PK:502184,00.html>.
- World Bank (2012). *Madagascar*. <https://data.worldbank.org/country/madagascar>.
- World Bank (2016). *Addressing Chronic Malnutrition in Madagascar*. <https://www.worldbank.org/en/programs/sief-trust-fund/brief/addressing-chronic-malnutrition-in-madagascar>
- Zhang et al. (1996). Impacts of Tropical Deforestation. Part I: Process Analysis of Local Climatic Change. *Journal of Climate*, 9(7), 1497-1517.

Appendix A

Key Informant Interview Questions:

1. How has your community and the local environment been affected by the Ambatovy mining project?
2. What are the negative and positive impacts of the mine on your community and the local environment?
3. When there are problems caused by the presence of the mine, how do you work to improve the situation?
4. How do you imagine an ideal relationship with Ambatovy? What should be done to realize this relationship?

Individual Interview Questions:

1. How has the presence of the mine affected your life? What positive and/or negative impacts have you experienced?
2. Have you experienced these positive impacts in your life related to the mine's presence?
 - a. Employment (indirect) and/or business opportunities?
 - b. Professional training?
 - c. Compensation, donations, or gifts from Ambatovy (money, land, materials, resources)?
 - d. Revenue from development projects and/or income generating activities?
 - e. Use of public infrastructures financed by Ambatovy (marketplace, CSB, public schools, soccer field, roads, wells)?
3. Have you experienced these negative impacts in your life related to the mine's presence?
 - a. Theft or damage of property?
 - b. Loss of access or difficulty accessing forest resources?
 - c. Loss of access or difficulty accessing clean water for drinking and/or agriculture?
 - d. Reduction in agricultural yields?
 - e. Health problems?

- f. Difficulty obtaining compensation and/or insufficient compensation from Ambatovy?
 - g. Familial and/or community conflicts?
4. How do you imagine an ideal relationship with Ambatovy? What should be done to realize this relationship?

Ambatovy Society Interview Questions:

1. How does Ambatovy balance its mining activities with its responsibilities to protect the local environment and support the needs of local communities?
2. In conversations with residents in the villages of Ampitambe, Ambihinierana, Ankazondandy, and Ambohitranivo, they suggest that their relationship with Ambatovy would improve if the company prioritized the training and recruitment of unemployed youth and the development of income-generating activities in their communities. They also expressed hope that Ambatovy establishes stronger and more transparent communications with their communities. What is Ambatovy doing to realize these goals?