

Responsible land governance in LDN programmes

The risks of decoupling forest conservation from legitimate tenure rights in Madagascar

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Responsible Land Governance in LDN Programmes

The risks of decoupling forest conservation from legitimate tenure rights. The case of Ankarafantsika National Park in Madagascar

Global Soil Week 2021-2024

Examining the challenges to safeguard and integrate legitimate tenure rights in management and policy decisions: a follow-up to the implementation of the UNCCD Decision 26/COP.14 on land tenure.

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1. Preface

Land is a strategic asset that supports livelihoods, the diversification of household revenues, access to credit, and investment in land restoration. In Madagascar, like many other countries across Africa, land tenure insecurity together with poorly designed conservation and land management policies is a major impediment to achieving land degradation neutrality, and to fostering community leadership of land restoration. By supporting the recognition and integration of communities' legitimate rights to land has the potential to successfully reconcile forest conservation agenda, food security goals and a strong engagement of dependent communities in land restoration efforts.

Over the last decade, various efforts have been made by UN organisations such as the UNCCD (United Nations Convention to Combat Desertification) and FAO (Food and Agriculture Organization) to encourage the use by governments of the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (VGGT). Decision 26 of the UNCCD at COP 14 and Decision 27/COP.15 called on the parties to the convention to proactively collect more data and evidence on tenure rights in LDN priority areas. The research initiated by TMG Research in four African countries, including Madagascar, aims to monitor the implementation of the UNCCD Land Tenure Decision.

Analysing the case of Ankarafantsika National Park in Madagascar, our research showed that implementing strict forest conservation measures is not conducive to community engagement in land restoration. Rather, it creates conflicts and undermines conservation goals in the medium and long terms. Although the communities that live inside the controlled occupancy zones of the park are usually allocated some plots of land for their livelihood needs, over 77% of surveyed households expressed worries that they would be expelled from the park and the plots of land they have been cultivating, often for more than 20 years. Consequently, most of them are reluctant to invest in land restoration. Interestingly, over 90% of respondents living inside the forest-controlled occupancy zones stated willingness to invest in sustainable land management (SLM) provided they were assured that they would not lose their farmland. For communities living outside the park, concerns around tenure security are similar, although they are lower in frequency. One of the reasons for this is a steady shift of land access mechanisms from traditional modes (succession, family land, first occupancy, etc.) toward leasing and sharecropping strategies. Some more well-off and educated farmers even engaged in land purchase and/or land formalisation procedure to secure their plots.

In conclusion, it is important to recall that land degradation neutrality (LDN) has the potential to address land degradation and accelerate the achievement of the SDGs, especially SDG 15.3. However, important progress is still needed in terms of data and policy frameworks that are needed to recognise and integrate legitimate tenure rights in decision making. Many policy-makers and conservationists perceive the current tenure rights discourse as vain rhetoric likely only to disrupt current forest protection approaches build on hard policy measures. It may be time to recognise that proposing alternative activities aimed at diversifying household income and reducing pressures on the forest, while helpful, has limited impact. With over 80% of household income depending on access to land, alternative income generating activities could be seen as a plus, but not enough to trigger a change in land use. Secure access to land could stimulate investment in land restoration if properly implemented and provided all enabling conditions are put in place.

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Acronyms

ANGAP	Association Nationale pour la Gestion des Aires Protégées
ANP	Ankarafantsika National Park
BMZ	German Federal Ministry for Economic Cooperation and Development
CLP	Comité Local du Parc (<i>local park committee</i>)
COP	Conference of the Parties
CBD	Convention on Biodiversity
COSAP	Orientation and Support Committee of the Protected Area
COZ	Controlled Occupancy Zone
FAO	Food and Agriculture Organization of the United Nations
GSW	Global Soil Week
LDN	Land Degradation Neutrality
LLandDev	Land, Landscape and Development Research Lab
MEDD	Ministère de l'Environnement et du Développement Durable (Malagasy Ministry of Environment and Sustainable Development)
MNP	Madagascar National Parks
NPE	Nouvelle Politique Energétique (<i>Malagasy new energy policy</i>)
NTFP	Non-Timber Forest Product
PA	Protected Area
POLFOR	Politique forestière (<i>Malagasy forestry policy</i>)
PSAEP	Politique sectorielle agricole, élevage et pêche (<i>agriculture, livestock, and fisheries sector policy</i>)
RGPH 3	Troisième Recensement Général de la Population et de l'Habitation (<i>third Malagasy general population and housing census</i>)
RPF	Restauration des Paysages Forestiers (<i>forest landscape restoration</i>)
SDG	United Nations Sustainable Development Goals
SLM	Sustainable Land Management
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
VGGT	Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security
ZET	Zone Ecotouristique (<i>Ecotourism zone</i>)
ZOC	Zone d'Occupation Contrôlée (<i>controlled occupancy zone</i>)
ZUD	Zone d'Utilisation Durable (<i>sustainable land use zone</i>)

Key Messages

1 Forest conservation goals cannot be decoupled from the legitimate rights of adjacent communities to access forest land and resources.

Effective conservation measures are those that recognise and protect legitimate tenure rights as basic safeguards in promoting land restoration initiatives.

2 Large-scale restoration policies and the continuous extension of green infrastructure measures have the potential to jeopardise land availability and access by poorer communities.

Strong governance frameworks that protect land rights, mainstream gender equality, and secure access rights for dependent communities are key to ensuring the success of restoration programmes. The absence of conflict over land does not necessarily imply security of tenure. Strict forest protection measures to achieve land degradation neutrality may translate into fewer disputes over land, and increase the fear of being evicted from occupied land, alongside greater reluctance to invest in SLM.

3 Perceived tenure insecurity is a strong impediment to investment in SLM and forest protection.

More efforts are needed to secure and integrate community tenure rights into forest management approaches and mechanisms.

4 Land leasing is a key mechanism for providing access to land for women.

Ensuring transparency and fairness in land leasing, through land lease formalization processes, can improve household revenues, food security and women's investment in SLM.

1 Introduction

With a total land area of 587,041 square kilometres, Madagascar is the world's fourth largest island¹ and home to unique wildlife and biodiversity resources. To protect those, the government of Madagascar sets ambitious LDN targets alongside various policy measures intended to address forest and land degradation. Madagascar's LDN targets and policies are also designed to support other environmental frameworks and initiatives, including commitments made at the fifth World Parks Congress in Durban, South Africa in 2003 to tripling protected areas (*Durban Vision*). Supported by significant donor investments, this commitment contributed to an increase of forest coverage from 1.6 million to 7.1 million hectares by 2016 (USAID, n.d.).²

This commitment, although welcomed by conservationists, proved to be a contentious undertaking for a country where more than half of the rural population relies heavily on forests for food, fuel and building materials (Razafison and Vyawahare, 2020). Reflecting on the forest conservation approaches implemented in Madagascar over the last 30 years, the former minister of environment and sustainable development³ noted a need for a paradigm shift and explicitly called "... to move toward a system which doesn't exclude humans and doesn't put local communities on the sidelines; it should be deeply social."⁴ Strict conservation measures can limit conservation gains if they drive rural communities off their lands and take away their livelihoods (Boyd and Keene 2021).

Despite the hard protection measures devised to protect Madagascar's national parks and other protected areas, the country lost 4.36 million hectares of tree cover between 2001 and 2021, equivalent to a 25% decrease in the country's forest cover⁵ (GFW, n.d.). Forest fires, which are often triggered by conflicts between adjacent communities and the forest management authorities over access to forest land and resources, consumed 269,000 hectares of forest during the same period (2001–2021). These conflicts, prompted by ill-conceived policies to reverse land and forest degradation (Mansourian and Berrahmouni, 2021), are ultimately rooted in the failure of policy-makers to protect and integrate the legitimate land rights of adjacent communities into governance and policy-making (Chabay, 2018; Kirui, 2016; Kramer et al., 2021), and to recognise the complex relationships between, on one hand, the rights of dependent communities to land, food security, and the forest conservation agenda on the other (Oxfam, 2022).

¹ <https://www.worldatlas.com/geography/10-largest-islands-in-the-world.html>

² https://www.land-links.org/wp-content/uploads/2010/12/USAID_Land_Tenure_Madagascar_Profile-2019.pdf

³ Dr Baomiavotse Vahinala Raharinirina. Minister from January 2020 to March 2022

⁴ <https://news.mongabay.com/2020/08/madagascar-minister-calls-protected-areas-a-failure-seeks-people-centric-approach/>

⁵ <https://gfw.global/3GmtRNr>

The United Nations Convention to Combat Desertification (UNCCD) recognised these relationships in two landmark decisions on land tenure (UNCCD Decision 12/COP.15 and Decision 26/COP.14). These explicitly called for communities' legitimate tenure rights to be respected as part of the imperative to achieve land degradation neutrality (LDN).⁶ Both decisions encourage use of the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (VGGT).

*“Actions taken in pursuit of LDN **should not compromise the rights of land users** (especially small-scale farmers and indigenous populations). These actions should support livelihoods, and should not diminish the productive capacity or cultural value of the land.”*

LAND DEGRADATION NEUTRALITY PRINCIPLE 2 | UNCCD

Despite the existence of global and national legal and institutional frameworks to support the integration of tenure rights in LDN and land restoration programmes, research is still lacking on how such global decisions can be translated into national policies and actions and how local experiences can be integrated into mechanisms to manage tenure rights in the context of LDN programmes.

The Global Soil Week project was initiated by TMG Research to fill this gap and to underline the importance of recognizing legitimate tenure rights in LDN and other programmes. In Madagascar, policy-makers face the dual challenge of protecting the country's unique biodiversity while ensuring that dependent communities are not engulfed by food and climate crises. The project aims to stimulate reflection on innovative ways of reconciling conservation priorities with the food security agenda through the promotion of responsible land governance, and in particular by recognising and protecting the tenure rights of dependent communities. It is hoped that the findings of this research project will support the implementation of UNCCD Decision 26/COP.14 in all four countries. TMG Research believes that international reporting processes require sound contextual information generated from local knowledge. Likewise, local knowledge, often generated through participatory tenure mapping and carefully designed policy dialogue, can inform and shape policies at national and international levels. Local evidence can thus help promote the recognition and protection of tenure rights.

⁶ <https://www.unccd.int/land-and-life/land-degradation-neutrality/ldn-principles>

2 Global Soil Week

2.1 Background information

The Global Soil Week (GSW) project is implemented by TMG Research and funded by the German Federal Ministry of Economic Cooperation and Development (BMZ). It was initially developed as a unique international platform bringing together a diverse range of actors to develop new policies and strengthen existing ones on sustainable soil management and responsible land governance. The transdisciplinary format of GSW allows soil management and land governance to be addressed in an integrated way, acknowledging the overlap and synergies between these two issues.

Since its launch in 2012, GSW has accumulated a large volume of knowledge and experiences from both its practical and theoretical work, while its focus and design have evolved in response to ongoing policy debates and land management programming. Since 2019, GSW has closely followed the processes towards achieving LDN and contributed to a stronger focus on implementing LDN measures through responsible land governance, prioritising tenure security for smallholder farmers and other marginalised natural resource users according to the principles of the FAO's *Voluntary Guidelines on the Responsible Governance of Tenure (VGGT)*. TMG's commitment to this approach informed the thematic focus of Global Soil Week 2021: "Creating an enabling environment for green recovery" (Kramer et al., 2021).

2.2 Implementation approach and objectives

The goal of GSW is to support the implementation of the UNCCD Decision 26/COP.14 decision on land tenure, including reporting on land governance and tenure rights to the UNCCD and the other two Rio Conventions (CBD and UNFCCC). The objective is to engage with policy-makers at all levels to create an enabling environment in which the legitimate tenure rights of vulnerable communities are recognised, protected, and integrated in LDN initiatives. GSW combines the proactive generation of local knowledge with experience-based action research.

The GSW project in Madagascar began by identifying a national partner to support research and serve as an interface between TMG Research and relevant institutions in the country. LLandDev⁷ was selected for its expertise in LDN processes and participatory approaches, as well as its network and experience with policymakers at the national, regional, and local levels.

Together with this national partner, TMG Research engaged in policy dialogue with the Ministry of the Environment and Sustainable Development (Ministère de l'Environnement et du Développement Durable – MEDD)⁸ to ensure close collaboration in designing and implementing the project. Working closely with a national partner and policy-makers also assured close alignment with national data and information needs, while contributing to LDN implementation processes.

⁷ Land, Landscape and Development Research Lab (LLandDev) was selected as TMG's national partner in Madagascar

⁸ Malagasy Ministry of Environment and Sustainable Development

As a result of TMG's consultation processes with our national partner and the MEDD, Ankarafantsika National Park (ANP) was selected as a case study area. This case was relevant because ANP is uniquely biodiverse, home to several endangered and endemic plant and animal species (ebony, birds, lemurs, turtles, etc.). It also plays a crucial role in the livelihood of nearly 262,000 people who depend on forest land and resources for their daily needs (RGPH 3, 2018). In all 166 villages and hamlets recorded within and around ANP, the communities depend mainly on agriculture, livestock breeding, and the harvest of non-timber forest products to meet their food and income needs. In response to the increasing demand of adjacent communities for land and forest resources the government instituted hard conservation measures to protect the park, resulting in various conflicts between the park authorities and local communities. Those conflicts have resulted in some cases in community members being fined or sent to prison, in night clearance of farm plots within the park, or in the setting of forest fires by some community members. Growing frustrations, whether latent or apparent, not only undermine LDN targets and forest conservation goals, but also bear the risks of violating communities' land rights. It is against this background that Ankarafantsika National Park was selected. It is hoped that by analysing the impacts of conservation measures on communities' legitimate rights and exploring ways to reconcile the conservation priorities of the Malagasy government and the dependent communities' rights to land and forest resources this research will lead to a better understanding of what drives those conflicts.

3 Land Degradation Neutrality in Madagascar

3.1 LDN targets and policy measures

Madagascar is committed to achieving Land Degradation Neutrality⁹ and defined four main targets to be achieved by 2030. These include:

- ▶ Improve productivity and carbon stocks in cultivated areas and grazing lands.
- ▶ Improve the cover of green infrastructure.
- ▶ Reduce conversion of forests into other types of land cover by 2030.
- ▶ Reduce conversion of wetlands into other types of land cover by 2030.

Madagascar has formulated various policy measures to support the implementation of LDN actions, while reinforcing frameworks and policy mechanisms for sustainable development. The first of these measures is to ensure **cross-sectoral coordination** in line with existing spatial planning instruments. The second involves promoting and enhancing **technical measures** that avoid or minimise land degradation and restore degraded landscapes. Other key measures to achieve LDN targets involve **mobilising financial incentives** through increased State commitment and **involving the private sector** in upscaling land restoration activities, in capacity building and supporting innovations, and initiating **research initiatives** on the impacts of SLM in relation to biodiversity and climate change. The box below contains a summary of policy measures connected to Madagascar's LDN target-setting programme.¹⁰

Box 1: Summary of LDN policy measures

- ▶ Integrate the concept of LDN into land use planning processes.
- ▶ Integrate the concept of LDN into sectoral policies and strategies.
- ▶ Extend sustainable agricultural practices to an area of at least 200,000 hectares by 2025.
- ▶ Reduce pasture fires by 2030.
- ▶ Restore 400,000 hectares of land using green infrastructure by 2025.
- ▶ Reinforce intersectoral capacity through sustainable land management (SLM)
- ▶ Mobilise funding for research on the benefits of SLM for biodiversity and climate protection.

Source: MEDD, 2018

⁹ <https://www.unccd.int/our-work-impact/country-profiles/madagascar>

¹⁰ https://www.unccd.int/sites/default/files/ldn_targets/Madagascar%20LDN%20TSP%20Country%20Report.pdf

3.2 Legal and institutional frameworks

Madagascar's LDN targets and policy measures have been designed to reinforce other national frameworks. For instance, the definition of LDN targets and land degradation hotspots builds upon actions undertaken under the Madagascar National Action Plan, adopted by government decree N° 199-2003 of March 11th, 2003, and more recently revised under the so-called *Plan d'Action National Aligné*¹¹ by government decree N° 2015-747 of April 28th, 2015.

Other important frameworks and policy documents that were considered when defining LDN targets and policy measures include those pertaining to forest conservation, climate change, water resource management, energy, and agriculture. Aligning LDN targets and policy measures to those framework documents was key to building synergies and avoiding negative feedback when implementing projects. Key policy documents relevant to forest conservation, climate protection and sustainable agriculture include, for instance:

- ▶ the Malagasy Environmental Charter (Law n° 2015 - 003),
- ▶ the national strategy for forest landscape restoration (*Stratégie Nationale de Restauration des Paysages Forestiers* – RPF),
- ▶ the Forest Policy (*Politique Forestière* – POLFOR), and
- ▶ the Malagasy New Energy Policy (*Nouvelle Politique Énergétique* - NPE).

In the water and agriculture sectors, reference documents include the national water policy (*Politique de l'Eau* – POLEAU), and the national agriculture, livestock, and fisheries sector policy (*Politique Sectorielle Agricole, Élevage et Pêche* – PSAEP).

Policy-makers in Madagascar expect LDN processes to reinforce linkages and synergies between existing agricultural and environmental policies and sectors through an effective and sustainable use of land. Likewise, the implementation of LDN should support ongoing conservations goals and policies, such as those formulated in the strategic plans developed by Madagascar National Parks (MNP) to ensure that national conservation priorities are met.

¹¹ <https://landportal.org/library/resources/lex-faoc158634/plan-d%E2%80%99action-national-de-lutte-contre-la-d%C3%A9sertification-align%C3%A9-au>

Broadly framed by the MNP's 2017–2021 strategic plan, the management of ANP was built on three key pillars:

- ▶ Conserving the biodiversity of the parks and reserves effectively and sustainably, through science-based tools and the development and implementation of specific management plans for each park;
- ▶ Co-managing the parks and reserves in collaboration with the representatives of local communities through the establishment of a formal organ;
- ▶ Developing market channels and financing opportunities to cover MNP's operational costs, ensure staff functioning and the implementation of activities.

In accordance with the second pillar above, a specific management plan¹² was developed for ANP, with clearly defined set of objectives and measures designed to regulate access and use of forest land and resources by adjacent communities (see Box 2).

Box 2: ANP conservation goals and measures

Conservation measures

- ▶ Zero forest clearance: To ensure zero clearance within the park.
- ▶ Fight illegal exploitation: to reduce illegal wood harvesting within the park by 90%.
- ▶ Zero forest fire: to ensure zero forest fires within the park.

Protection of Ramsar sites

- ▶ To protect the park's Ramsar sites (wetlands of international importance designated under the criteria of the Ramsar Convention on Wetlands): to ensure the preservation of 147,210 hectares of wetlands, comprising six lakes classified as Ramsar sites (Ramsar site n° 2289) since February 2nd, 2017. The protection area includes also riparian ecosystems and Raffia palms, which have traditionally been harvested by adjacent communities to meet their livelihood needs.

Co-management measures

- ▶ Ensure a 70% representation of the Local Park Committees in the Orientation and Support Committee of the Protected Area (COSAP).
- ▶ Ensure that the area monitored by local park committees (CLPs) reaches 70% of the park's total area.
- ▶ Ensure that 20% of the total perimeter of green belts surrounding the park is fenced.

Source: Ankarafantsika National Park management plan 2017–2021)

¹² Plan d'Aménagement et de Gestion. Plan quinquennal de mise en œuvre 2017-2021

1. The **noyau central or core zone** (42,878 ha) includes those forest ecosystems considered to be the most intact. The management of this area is exclusively oriented toward the conservation and protection of a maximum number of ecosystems representative of the National Park. While some socio-cultural activities such as sacred rituals, and minimal population movements along the existing road infrastructures are permitted, the extraction of forest products by adjacent communities or any other stakeholder is forbidden.
2. The **zones d'occupation contrôlées (COZ)** or controlled occupancy zones (90 ha) comprise villages, settlements and farms that existed before the creation of the National Park. Communities living inside the COZs are required to comply with rules and regulations specified in a document called a *cahier de charges*. The management aim of this zone is to ensure that local populations that were living within the forest well before the government issued the classification decree (1972) remain inside the boundaries defined for them after the establishment of the park. Communities are not permitted to extend their farms and agglomerations beyond those initial boundaries. Regardless of how long they have been living on those lands, they cannot claim any property rights, though they are allowed to exclude foreigners or newcomers from "their" lands. They can carry out agricultural and small-scale commercial activities in the park to meet their livelihood needs, provided these activities are not explicitly forbidden by said regulations. Communities are strongly encouraged to sustainably manage the resources at their disposal and in close concertation with the management staff of the park (participatory management). Regular monitoring and evaluation activities are implemented by the park to assess the impact of communities' activities on the state of the forest. Settlement by new immigrants or any activity that might undermine the sustainable management of resources inside the controlled occupancy zones are strictly forbidden.
3. The **buffer zone** comprises the ecotourism zone (*zone eco-touristique* or ZET), the sustainable use zone (*zone d'utilisation durable* or ZUD), and the service zone (*zone de services*).
4. The aim of the **ecotourism zone** (3,060 ha) is to generate income to support the management of the park through the provision of educational and recreational services to visitors or tourists. These includes eight sightseeing tours and several lakes, including those protected under the Ramsar convention. Communities are not allowed to access tourist areas and sites without permission. Likewise, they are not allowed to graze their animals, nor to collect fuelwood or other forest products within this zone.

5. The **sustainable use zone** (30,133 ha) is the immediate area surrounding the core zone. Its aim is to involve adjacent communities in the protection of ANP's natural resources through their sustainable use. Settlements or other permanent land uses are forbidden within this zone. The extraction of service wood and non-timber forest products is permitted under specific conditions and for certain community members. The communities of Marosakoa, who mainly live within the COZ, are allowed to exploit specifically designated tree species for construction purposes. The harvesting of NTFPs such as masiba, raffia fibre, honey, medicinal plants, wild lemon, and tree barks are permitted but controlled by the forest authorities through a network of 413 monitoring agents organised in the so-called local park committees (CLPs). Since 2011, the communities of Ankijabe are permitted to use the savannas inside this park for pastoralism. They are, however, required to organise into local associations called *Tsimanavaka* and prove membership before they are allowed to use these resources. The use of fire by communities to manage grazing resources is strictly forbidden.
6. The service zone includes all facilities built and managed for the staff of the park for research activities and tourism. These include houses, offices, roads, lodges, and other amenities. The objective of the service zone is to provide and maintain operational infrastructure for the management of the park and to ensure that tourists have essential amenities to enjoy their stay in the park.
7. The other buffer zones are all other ecosystems protecting the forest and contributing to the services provided by the park.

An additional protection zone, which is not officially part of the national park (see map below), was set up in 2015 to protect the park from uncontrolled extension. Fearing that the expansion of village agglomerations around the protected area would exacerbate pressure on land, this protection zone was created with the aim restricting or controlling village expansion in collaboration with the communities. Agriculture, pastoralism and other activities are authorised by Madagascar National Parks on an exceptional basis. The construction of social infrastructure (schools, dispensaries, etc.) is permitted, but other "non-agro-pastoral activities" are subject to prior approval by the management of the park.

Beyond the protection zone is the area commonly referred to as the peripheral zone (*zone périphérique*). This includes the area of all the villages, hamlets and settlements that have a direct influence on the park (anthropic pressures), and which also participate directly or indirectly in the conservation of the protected area. Based on these criteria, the park management identified 166 villages, hamlets and settlements hereafter referred to as adjacent villages or communities. The aim of this zone is to ensure that the development of the adjacent communities is compatible with the conservation aims of the park. Any activities other than those traditionally carried out in the peripheral zone are subject to consultation with the park stakeholders, including MNP. Although the communities living inside this zone are referred to as "conservation partners" and beneficiaries of the park development programmes, their decision-making powers and freedom of self-determined development remain limited and subject to the protection and management of the park.

5 Mapping communities' land and land use rights

5.1 Data collection area

As part of the GSW project, a household survey was organised in three communes, namely Andranofasika, Ankijabe, and Marosakoa. The selection of these communes was based on a set of criteria including communities' main occupation and spatial proximity to the park. For instance, in the adjacent commune of Andranofasika a large proportion of the communities depend on agriculture. Ankijabe is located outside the park, and most of its community depends on pastoral resources that are often available around or inside the park. Almost 90% of Marosakoa commune is located within the controlled occupancy zone.

Different ethnic groups coexist in the three communes. These are the *Betsileo*, *Betsimisaraka*, and *Merina*, as well as *Sihanaka* migrants. All are primarily crop farmers who cultivate rice (irrigated and rainfed) and dry crops. The *Sakalava* depend mainly on cattle pastoralism. Other common livestock species include goats, sheeps, and poultry. The *Antandroy* derive their livelihoods from extensive herding and dry crop farming (agropastoralism). While all communities practice fishing and harvest non-timber products (raffia palm, honey, *masiba*) as alternative or secondary economic activities, charcoal production and timber logging are commonly associated with the *Betsileo* and *Antandroy*.

5.2 The mapping methodology

The mapping process follows a three-step approach that combined 1) a household survey, 2) participatory mapping with interactive discussions with communities, and 3) the development of (geo)databases for spatial and socioeconomic analysis.

The first step consisted of a household survey implemented in seventeen villages across the three communes. Using a semi-structured questionnaire, the survey focused on communities' economic activities, their dependencies on forest resources, access mechanisms to land and forest resources, and conflicts, including resolution mechanisms. A convenience sampling method was used to survey 400 households across the three communes.

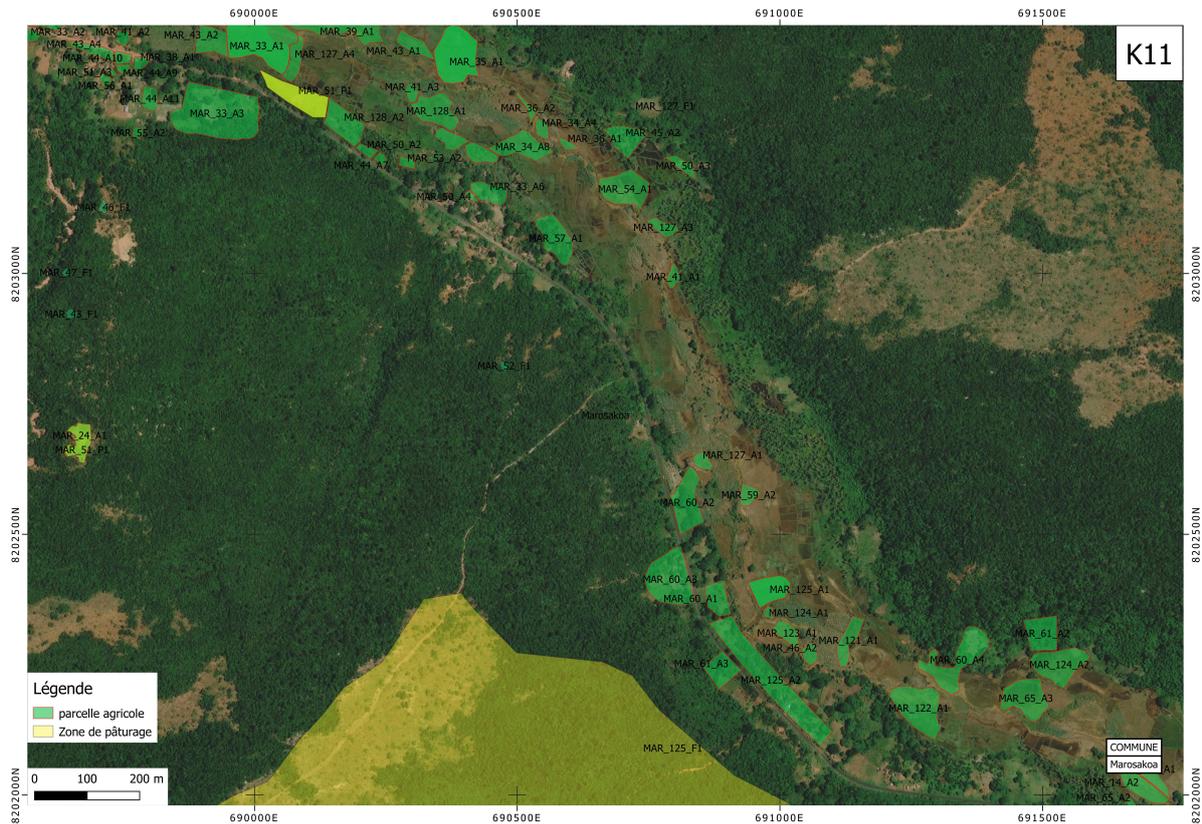


Figure 3: Georeferencing communities' farm plots and grazing areas on a high-resolution satellite image (50cm resolution, Maxar mosaic image 2021–2022 datasets).

In a second step, the household survey data were complemented by participatory mapping of the respondent's farmlands and grazing areas. Through a careful question and answer format, respondents provided more information and insights on the location of their farms and/or grazing areas. They were then helped to identify their farm plots and/or grazing areas on printed satellite images. The discussions were based on high-resolution satellite images of the areas of study (territorial grids extracted by LandDev).



Figure 4: Participatory mapping in Ampijoroanala, Marosakoa.
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The final step of the mapping process consisted of digitalizing the plots and grazing areas that were drawn by farmers onto the high-resolution images to create a geodatabase. This included linking the household survey data with the digitalised maps to create a single geodatabase ready for import and analysis on Cadasta¹⁴ or any other compatible platform.

¹⁴ <https://cadasta.org/technology2/>

6 Results

6.1 Livelihood pathways and dependency on land and forest resources

Over 65% of all respondents across the three communes (Marosakoa, Andranofasika, and Ankijabe), regardless of gender, depend on agriculture for their livelihood (see Figure 5). In Marosakoa, an additional 21% are engaged in livestock farming. Small businesses and other income-generating activities play only a minor role in the three communes.

Main source of income per commune

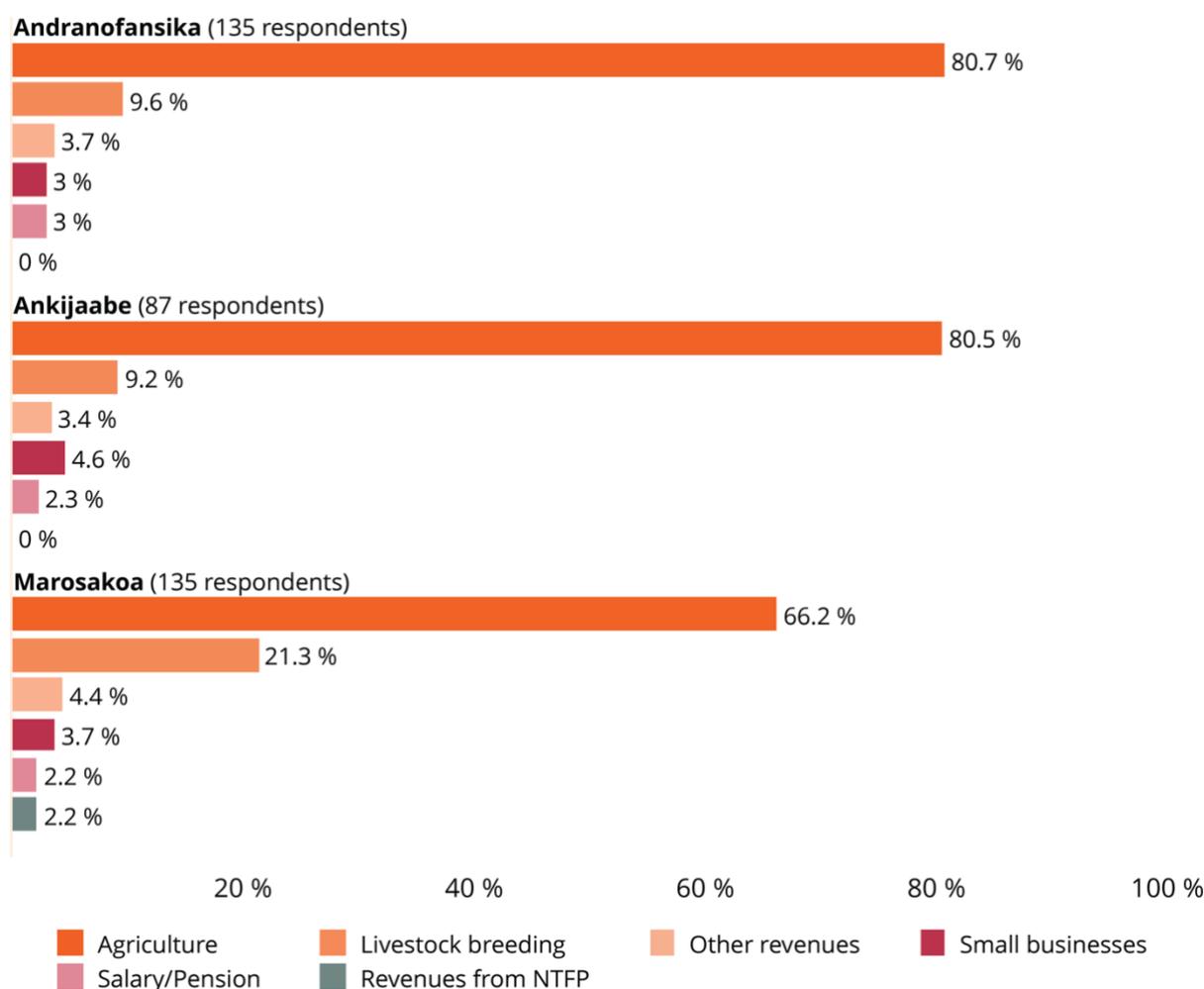


Figure 5: Communities' main sources of income across the research area.

Source: Household Survey, 2022.

While income sources do not vary much from one commune to another, it is interesting to note that the communities of Marosakoa who live within the controlled occupancy zones (COZ) practice more livestock production than those living outside it (Andranofasika, Ankijabe). This may be explained by the fact that people living within the COZ have more access to grazing

resources than those outside the park. The harvesting of non-timber forest products (NTFPs) is also a benefit that communities inside the park enjoy, unlike those living outside.

Conversely, the communities living outside or on the edge of the COZ seem to have larger plot sizes than those living in the COZ. Our data showed that farmers living outside or on the edge of the park have about two hectares of land to meet their livelihood needs, whereas their counterparts living inside the COZ rely on just one hectare of land or less to meet their needs. The plot size that the adjacent communities have at their disposal for cultivation could be even lower, as farmers have a tendency to overestimate their farm size as revealed by the farm sizes computed using GIS techniques after the participatory digital mapping described above (see Figure 6). The data suggest that actual farm sizes (computed farm size values) may be as little as half those stated by farmers (perceived farm size values). However, for reasons of consistency, the analysis in this report is based on the perceived farm size values rather than the computed valued. This is because the latter values have not been discussed with the farmers to gain their feedback and consensus. It is also worth noting that the values reported here are median, not mean, values.

Computed versus perceived farm size based on respondent location



Figure 6: Estimated versus computed farm size values by respondents' spatial location.

Source: Household Survey, 2022.

Regardless of respondents' spatial location, the survey data reveals that each household has approximately two plots of land (median value). Coupled with the farm sizes shown above, we conclude that the communities living inside the park have only very small plots of land for cultivation. With the growing demand of an ever increasing population, communities are expected to face more and more land fragmentation and degradation. Small plot size and land fragmentation are generally acknowledged as important limiting factors to the implementation

or adoption of SLM practices (Fentahun et al., 2023; Kansanga et al., 2020; Van Song et al., 2020). While there appear to be no differences in farm size between women and men in communities living within the park, women living outside and adjacent to the park have half the farm size of men (see Figure 7). Regardless of gender, people living inside the COZ have just half the farm size of those living outside and adjacent to the park limits.

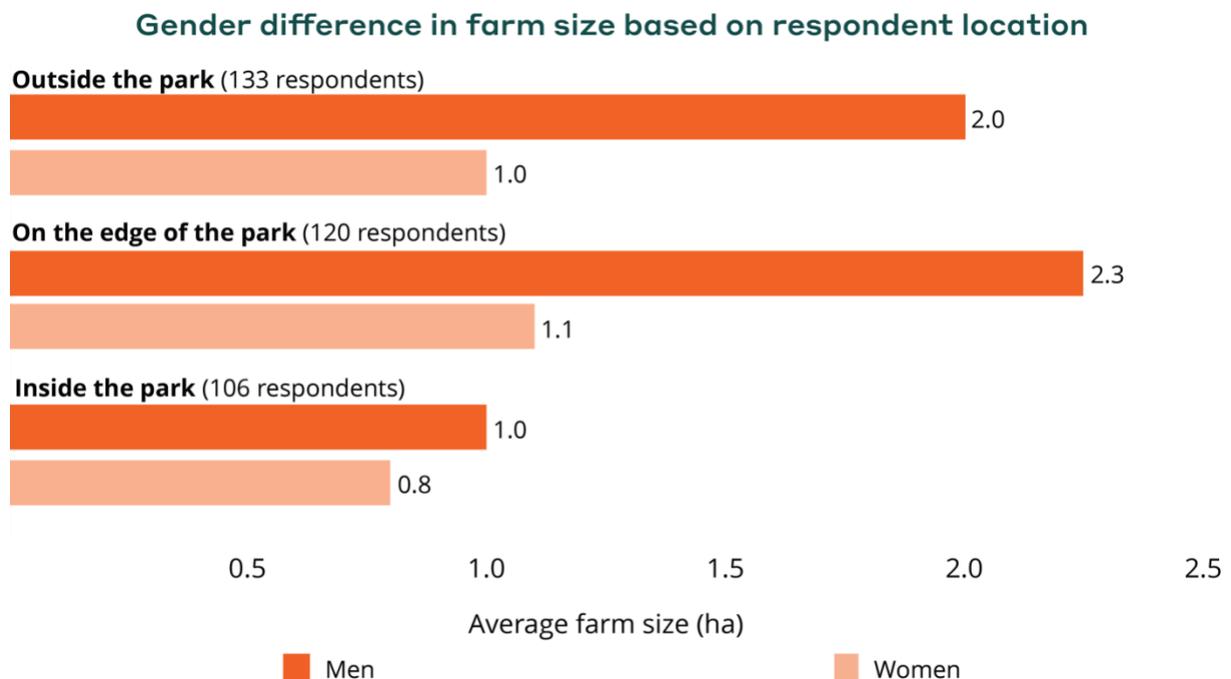


Figure 7: Difference in farm size between women and men living outside, adjacent to, and inside the park.
Source: Household Survey, 2022.

To better understand the degree of dependence of communities on forest land and resources, we analysed the ownership of farmland outside the forest on the assumption that farmers outside the forest area will be better able to withstand harsh forest management measures, including eviction from the forest area. In contrast, those who do not own farmland outside the forest area are highly dependent on the park and therefore more vulnerable to policy measures that could restrict their access to and use of forest land and resources. About 81% of communities living inside the COZ have no other farmlands outside the forest area, suggesting a crucial dependency on forest land (see Figure 8). This observation is consistent with statements by representatives of the commune of Marosakoa who participated in a multistakeholder workshop, held in Andranofasika on November 30th, to discuss the findings of the household survey. Complaining about the ever-shrinking space they have for cultivation and grazing, they also raised concerns about their capacity to meet households needs.

Land access outside of the national park depending on location to the COZ

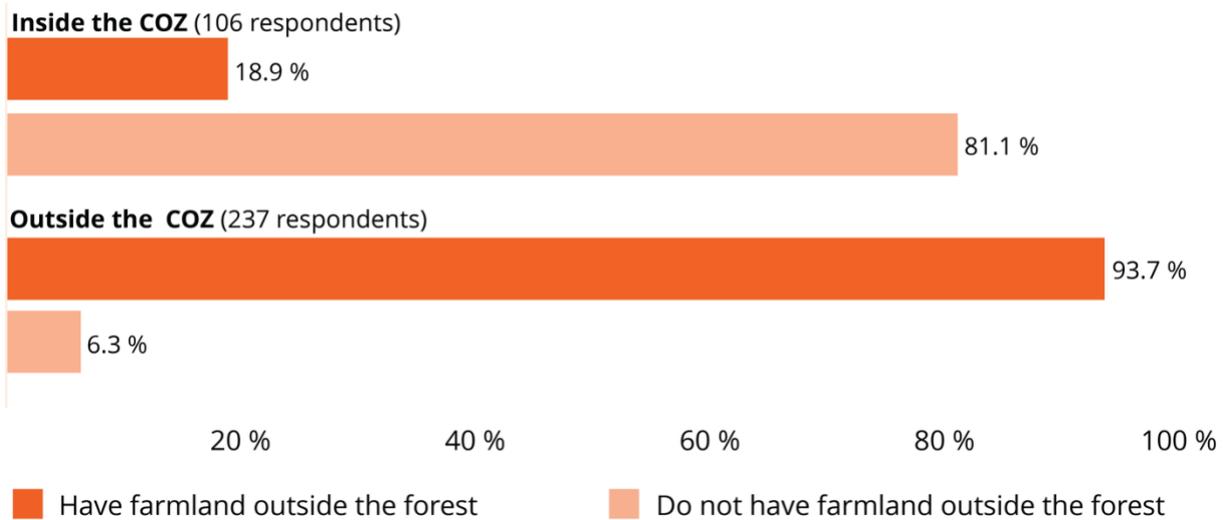


Figure 8: Land access outside the national park.

Source: Household Survey, 2022.

In communities living outside the forest area, about 94% of respondents farmed land that was also located outside the forest area. This is likely due to the strict forest protection measures in place to fight farm encroachment within the forest.

When asked about their dependence on the park, only 1% of communities living inside the park stated they could meet their needs without access to the forest. Of the 99% who claim to be dependent on the park, over 45% could not meet any of their livelihood needs without access to the park (see Figure 9). Among the communities living outside and adjacent to the park, about 10% of respondents critically depend on the park. Across the three communes, fewer than 20% of respondents stated that they could satisfy their needs without access to forest land.

Can households meet their needs without accessing forest land?

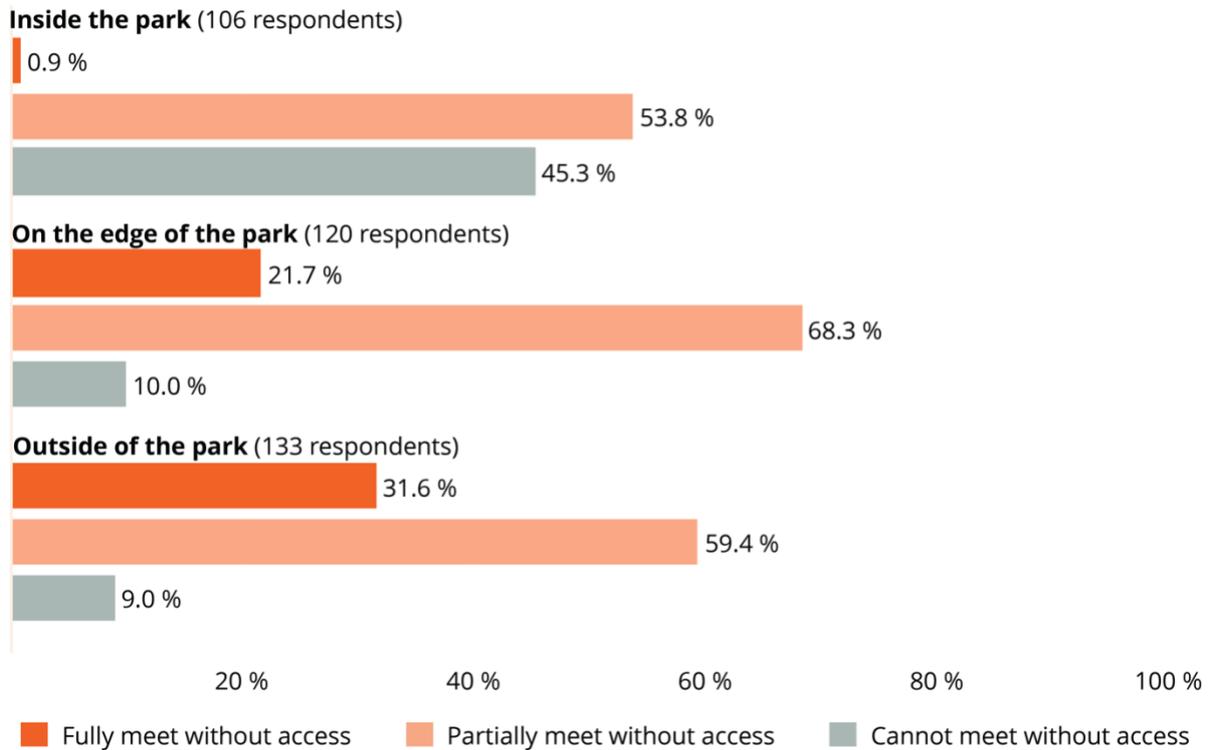


Figure 9: Adjacent communities perceived dependency on land and forest resources in and around Ankarafantsika National Park.

Source: Household Survey, 2022.

In conclusion, it is important to observe that in Madagascar, like much of Africa, farm size plays an important role in farmer's coping strategy to shocks and crises and might be used as a proxy for vulnerability (Jamshidi et al., 2019; Sahoo and Sridevi, 2021).

The survey data show that, despite being granted access to and use of forest land and resources by the forest management authorities, the communities living inside the COZ are the most vulnerable, and likely to suffer most from any change in management policies that could undermine their access rights to forest land. In designing conservation policies, it is therefore important to ensure these do not conflict with mechanisms that safeguard adjacent communities' legitimate rights to land and forest resources.

6.2 Land access mechanisms in and around ANP

Regardless of where they live, farmers most often gain access to farmland through succession, land purchase, renting, and first occupancy modes (see Figure 10). Locally known as “the right of the axe” or “the right of fire”, this latter access mode is given to someone considered by communities as the first to clear an area of forest for cultivation (first user). The terms “fire” or “axe” refer to ‘slash and burn’ agriculture.

Communities living within the COZ have mainly gained access to the forest land they currently use through three mechanisms, namely the “right of fire” (31%), succession (26%) and land purchase (25%). Within the park land purchase and ownership is prohibited, so communities enjoy only usage rights. The term “land purchase” used here refers to financial transactions in which one household agrees to “buy” another household’s right to use a particular piece of land. Under local unformal mechanisms, an outsider cannot obtain land through such transactions, as this is permitted only for communities living within the COZ. Other modes of access are donations (12%) and leases (4%).

How did you get access and use rights on the farm plots you currently occupy?

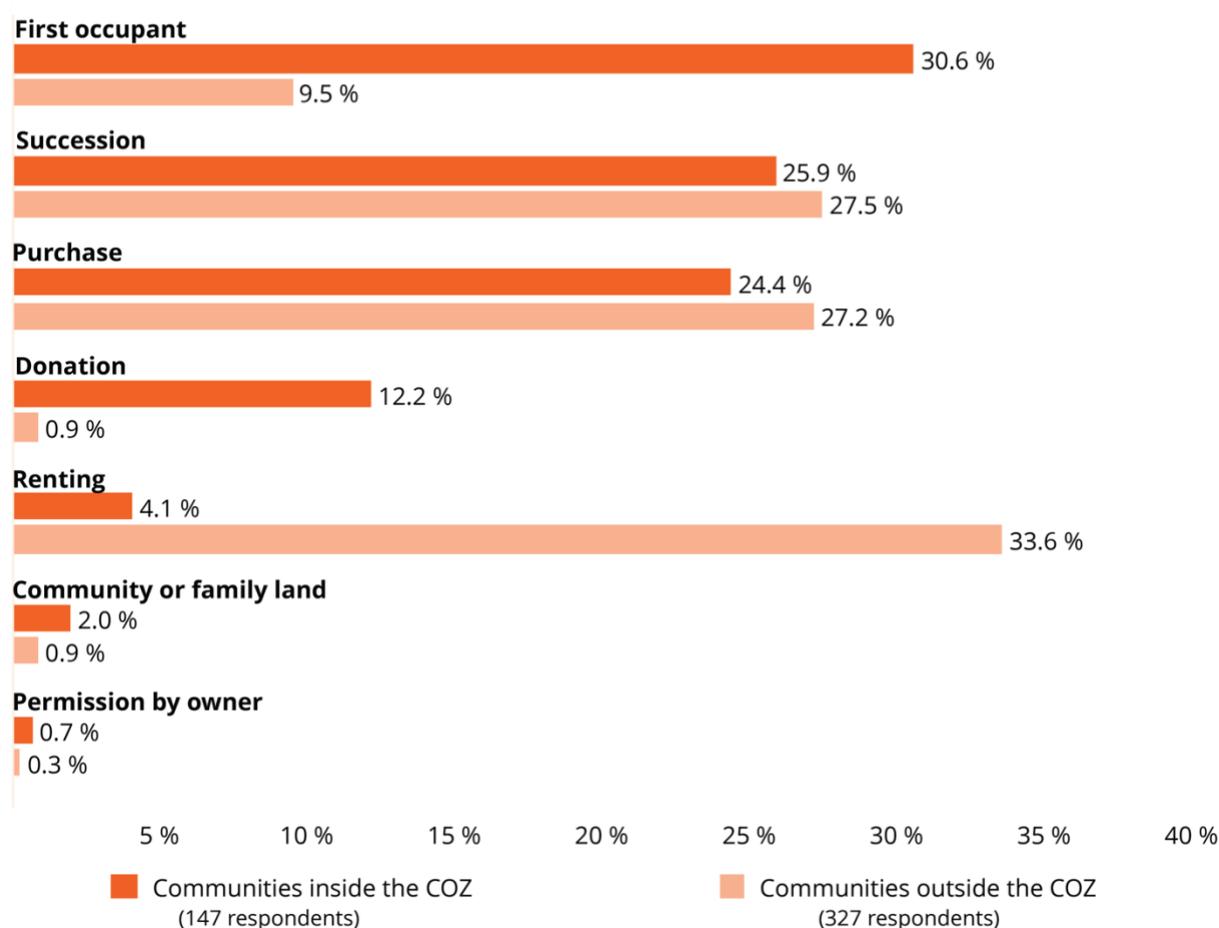


Figure 10: Land access modes of communities living in and around ANP based on the respondent's location.

Source: Household Survey, 2022.

Among communities living outside the COZ, renting is the most common mode of access to land (34%), followed by succession (28%) and purchase (27%). This may be explained by the fact that over 80% of the interviewees have a migration background (Valovontaka, Zanatany and Vahiny). This is consistent with the findings of Minten and Razafindraibe (2002) who noted that land leasing and sharecropping contracts proliferate in regions with high migration rates, such as northern Madagascar. It is also important to note that in Madagascar few households can afford to purchase land (Andrianantoandro and Bélières, 2015). The vast majority rely on succession and renting (including sharecropping and leasing contracts) as highlighted by our survey data. The data also showed that mechanisms for access to land have changed drastically (see Figure 11). While about 20 years ago most access to land was either through succession (42%), land purchase (36%) or the system of first occupancy (13%), nowadays, access to land is organised primarily through renting (about 60% of respondents).

Change in access and control of land by farmers

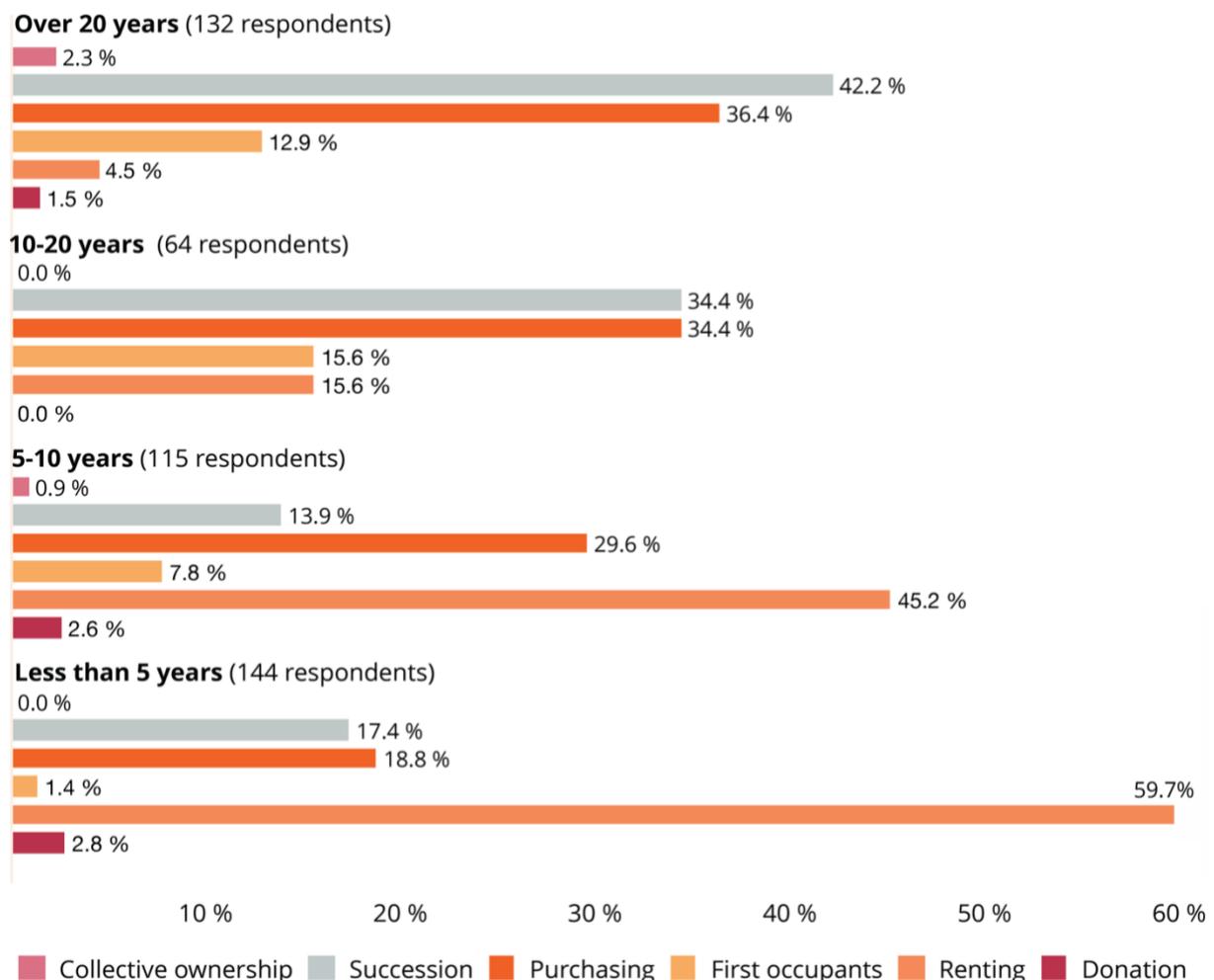


Figure 11: Change dynamics in land access mechanisms in Andranofasika, Marosakoa, and Ankijabe.

Source: Household Survey, 2022.

In conclusion, it is interesting to observe a shift from traditional modes of access towards more secure mechanisms. Leasing, which accounted for less than 5% of land access over 20 years ago, has become the primary mechanism through which communities access land across the three communes. Land purchase is constrained by various regulations on land transactions, or simply by the weak purchasing power of the communities studied. For women, renting has even become the primary mode of land access and a key strategy to secure land. Renting provides women who live adjacent to or outside the park a great comparative advantage vis-à-vis those who live within ANP.

6.3 Conflicts over land in and around ANP

Survey data highlighted few cases of conflicts over land in Andranofasika, Ankijabe or Marosakoa. Of more than 860 plots of land that were georeferenced during the survey, only 58 cases of conflicts (about 7%) were recorded (see Figure 12). Thirty-six cases concern the communities of Andranofasika, fourteen Ankijabe and only 8 cases occurred in Marosakoa. Only 8 cases of conflict (14% of total) were recorded on land plots owned by women.

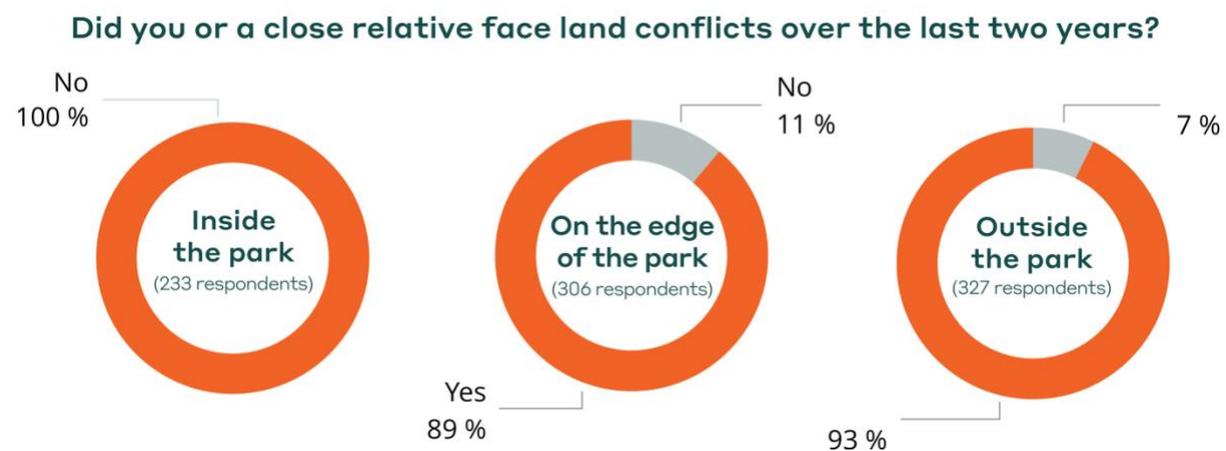


Figure 12: Conflicts over land in and around Ankarafantsika National Park.

Source: Household Survey, 2022.

Further data analysis highlighted that the conflicts are more concentrated at the periphery (59%) and outside the park (41%). Seventy-four percent of the conflicts recorded outside the park, and 85% of those recorded among the population living at the edge of the park involve neighbours (see Figure 13). Conflicts involving family members also occurred, but they represent just 17% of conflicts recorded outside the park and only 6% of those recorded at its periphery. Surprisingly, conflicts between communities and the park authorities (MNP) represent just 6% of those recorded at the periphery and about 4% of those recorded outside the park. No conflict has been recorded in villages/hamlets within the park, especially in the controlled occupancy zones. This could be explained by the fact that farmers who benefited from land allocation are aware of the dimensions and limits of their plots, and encroachment of other farmers is unlikely due to the restrictions.

Which stakeholder were involved in land conflicts among communities?

On the edge of the park (33 respondents)



Outside of the park (23 respondents)



Legend: Neighbours (dark orange), Family members (medium orange), The State or the MNP (light orange), Others (grey)

Figure 13: Stakeholders involved in land conflicts among communities living in and outside the park.

Source: Household Survey, 2022.

On the reasons given for land conflicts, 43% were related to land ownership, 23% to plot limits and 20% to crop damage (see Figure 14). Conflicts recorded on land plots owned by women are all related to contestation by neighbours.

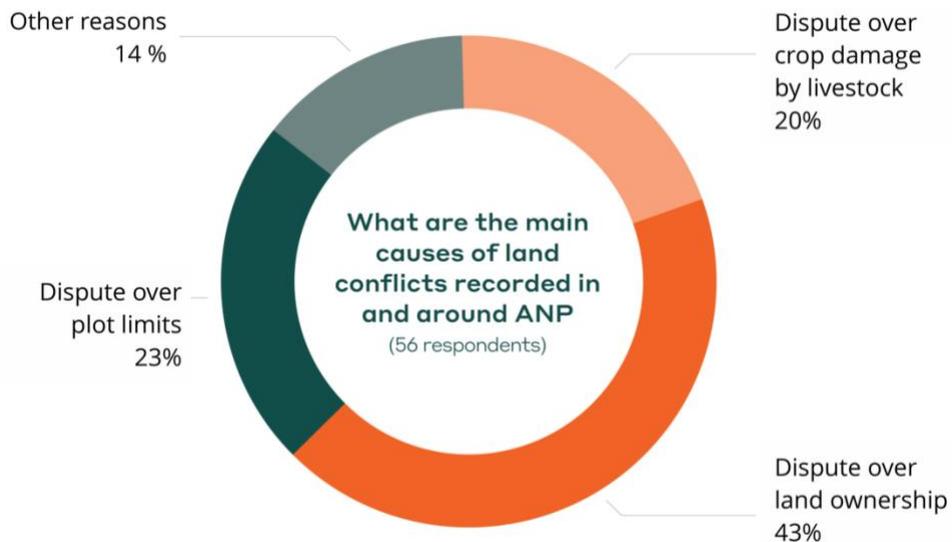


Figure 14: Main causes of land conflicts recorded in and around ANP.

Source: Household Survey, 2022.

To summarise, it is important to highlight that cases of conflicts over land in and around ANP exist but concern just 7% of all farm plots surveyed (n=866). The conflicts were mainly between farmers and their neighbours over land ownership, although disputes over crop damage by livestock or plot limits were also recorded. Interestingly, the communities living inside the controlled occupancy zones did not report any conflict on their plots of land, which may presume a certain level of tenure security in these communities. Further analysis is needed to understand whether the observed absence of land conflict in Marosakoa translates into more tenure security for farmers living inside the controlled occupancy zones. The findings are summarised in the next section.

7 Tenure perception and its implications for forest conservation in ANP

Tenure security is perceived differently depending on the respondent's location. About 80% of the communities living outside the controlled occupancy zones expressed more confidence in their tenure rights and no concern about losing their farmland (see Figure 15). This may be explained by the fact that they farm on plots of communal land acquired mainly through renting or other forms of land allocation.

How worried are you to lose access and use of your farmlands, against your will, in the next 5 years ?

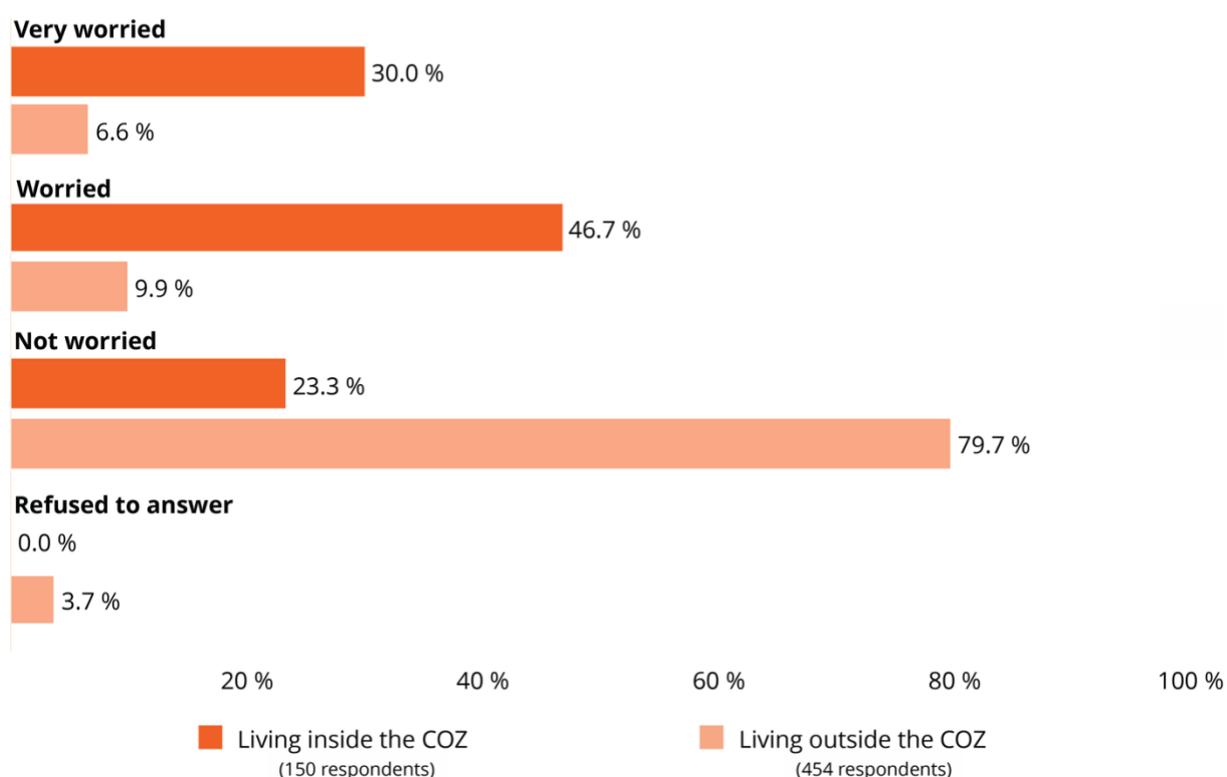


Figure 15: Perception of tenure security by respondents' location.

Source: Household Survey, 2022.

However, almost 77% of respondents living inside the COZ expressed worry about losing their farmland. In most cases, farmers are worried that they may be expelled by the forest authorities or government from the plots of land they have been using, often for more than 20 years (77% of respondents). Other fears of dispossession relate to disputes with neighbours or family members, but these are of little concern compared to the fear of being evicted from the forest by the authorities (see Figure 16).

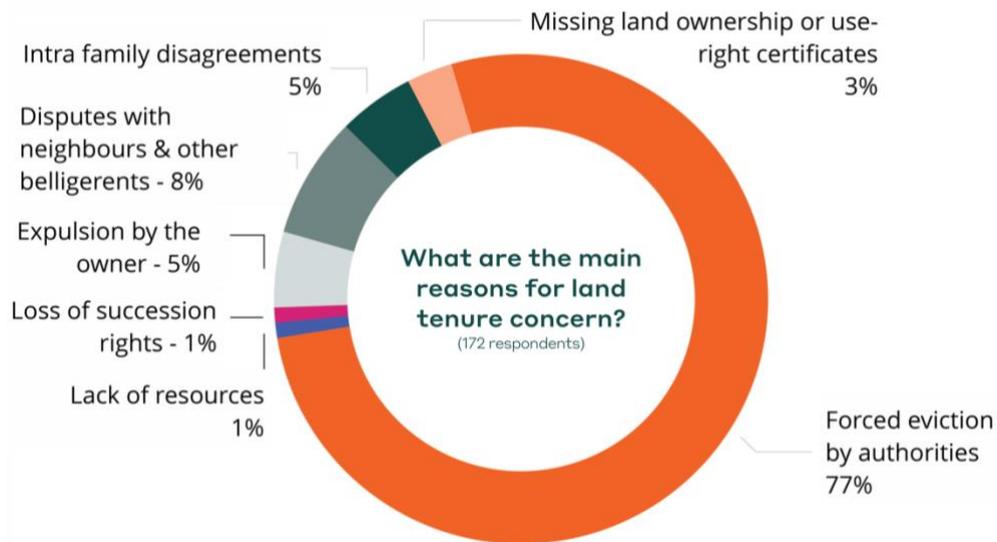


Figure 16: Main reasons for land tenure concerns.

Source: Household Survey, 2022.

When asked about the rights they believe they have to the land they currently use, farmers had different understandings depending on their location. Over 40% of respondents among the communities living outside and at the periphery of the park perceive themselves as having all rights (transfer, leasing, succession, etc.) to the plots of land they use, compared to 19% of those living inside the controlled occupancy zone (see Figure 17). This may be explained by the fact that some of the respondents living outside or at the periphery of the park have their farms on communal lands. Land purchase and renting were perceived by the communities surveyed as the most secure mean of land access outside of succession.

Claimed rights over the farm plots being used by households

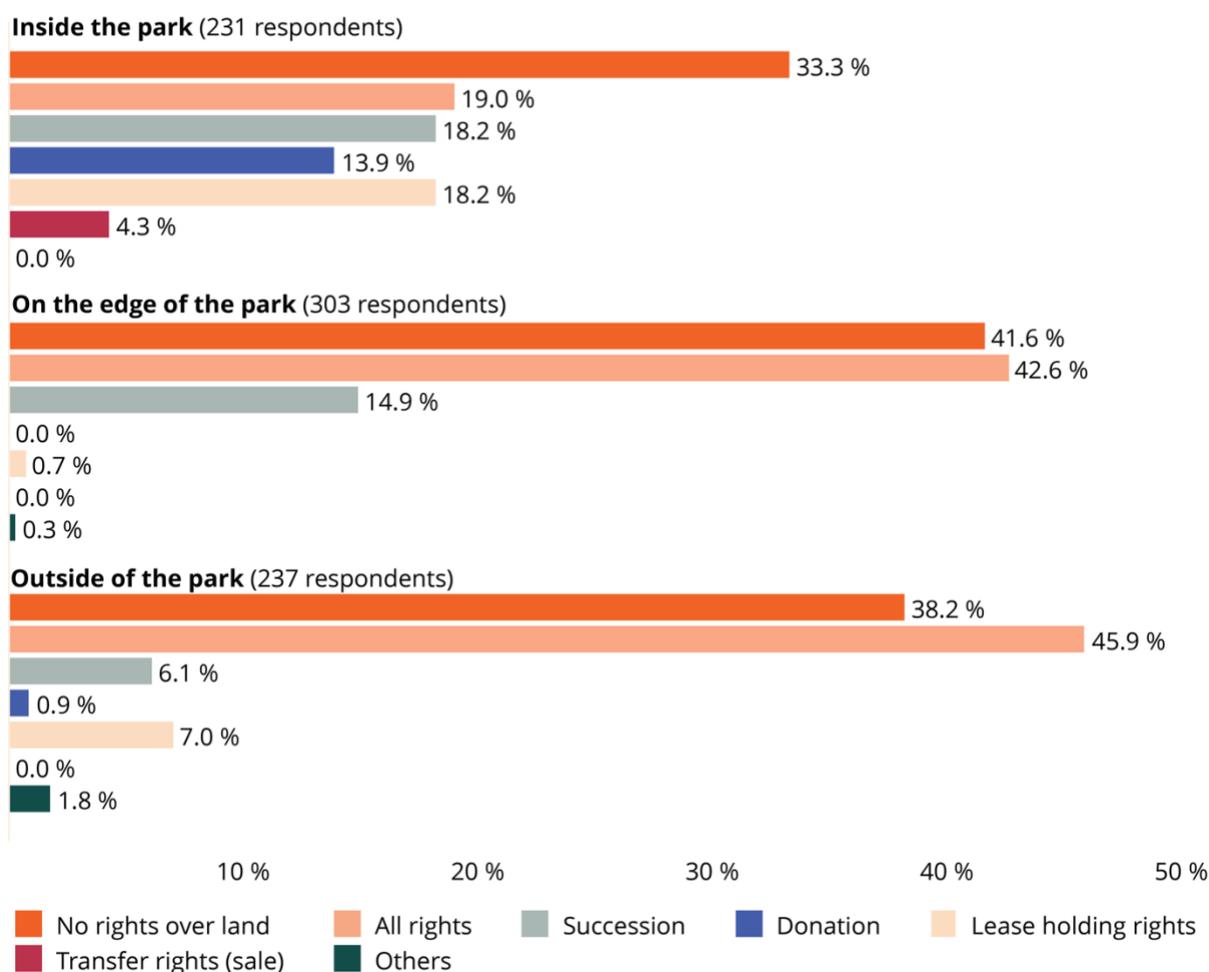


Figure 17: Perceived rights to the land occupied by farmers in and around ANP.

Source: Household Survey, 2022.

Curiously, the proportion of respondents who reported that they have no right to the land they currently use is also high, reaching 43% among the communities living on the edge of the park and over 38% among the communities living outside the park. This highlights a general sense of land insecurity since some of the farmers, especially those living on the edge of the forest, have their farms inside the buffer zone of the park, which has been extended over the last years to offer better protection against forest fires. The sense of land insecurity is even stronger among the communities living inside the controlled occupancy zones of the park, with more than one third of respondents having no perceived rights to the land they use. This may be because most of the respondents, whether inside or outside the park, have no formal document to prove ownership or usage rights apart from rudimentary contracts of sale, the so-called “petits papiers” which are largely used by communities as land certificates, although they are not formally recognised by the Malagasy land code. This sense of land insecurity confirmed that the absence of conflicts over land observed among the communities living inside the park does not translate into tenure security or tenure rights. Moreover, the widespread fear of losing their land is not conducive to an enabling environment for the implementation of restoration activities or investment in sustainable land management.

To understand the implication of land insecurity on forest conservation, we analysed adjacent communities' investment in SLM practices and assessed their willingness to invest in SLM if their current rights to land were recognised and secured by the forest authorities (see Figure 18).

Did you implement any SLM practice on your farm over the last two years?

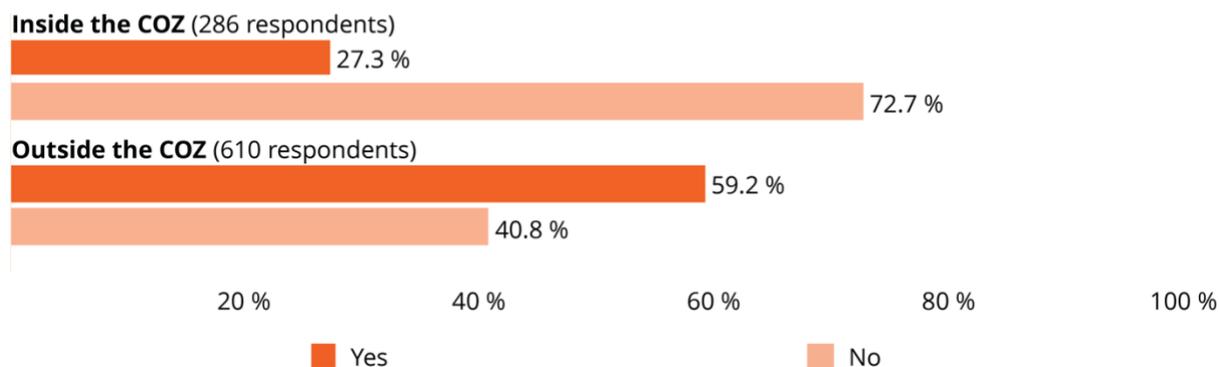


Figure 18: Use of SLM practices by farmers living in and around the Ankarafantsika National park.

Source: Household Survey, 2022.

Among the communities living inside the COZ, where fear of expulsion from the park is highest, the proportion of farmers who do not apply SLM practices (73%) is much greater than that of those who apply them (27%). Among farmers living outside the forest area, where fear of losing farmland is much lower, almost 60% of respondents reported applying SLM practices.

On the likelihood of them applying SLM practices if their tenure were more secure, all respondents regardless of gender and spatial location stated that they would apply SLM. Over 90% of respondents living inside the controlled occupancy zones reported a willingness to invest in SLM if they had assurance that they would not lose their farmland one day (see Figure 19).

How likely or unlikely is it that you would invest more on SLM practices if you were on a more secured plot of land?

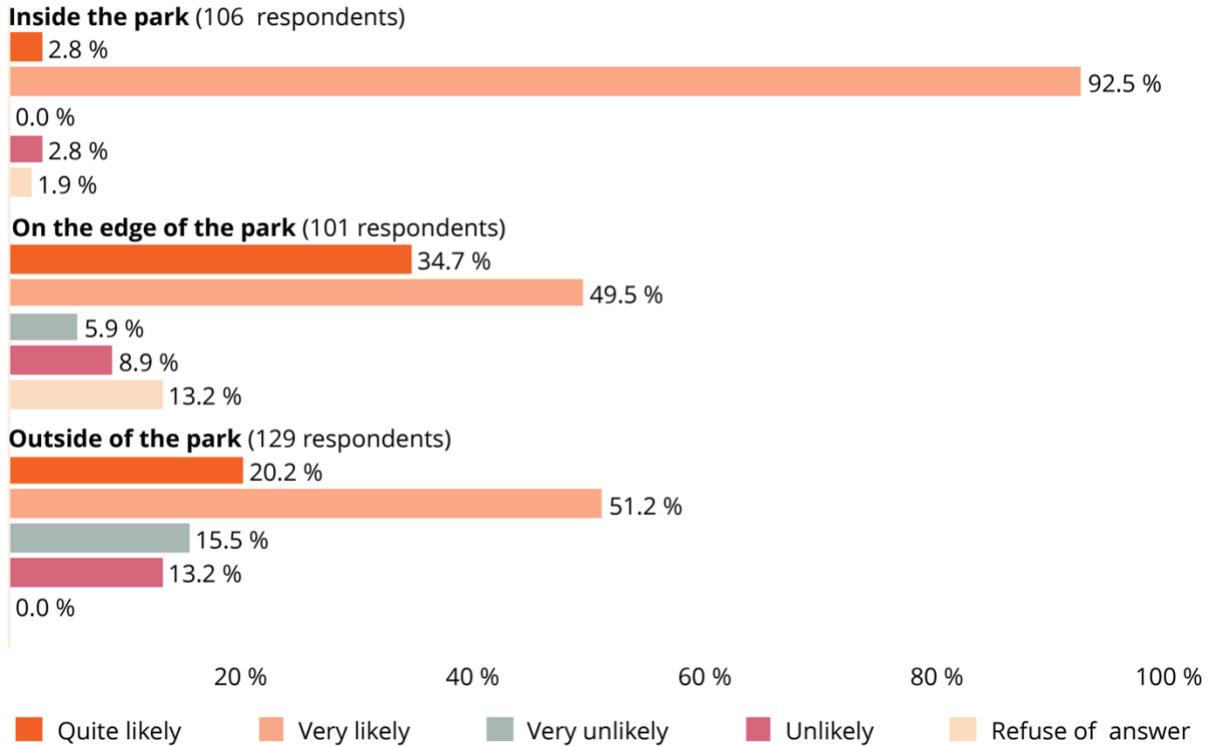


Figure 19: Likelihood of investing in SLM if tenure were secure.

Source: Household Survey, 2022.

While the above-stated willingness to invest in land restoration should be treated with caution, this information, combined with the above analysis provides significant insight into the importance of tenure security in engaging communities in land restoration and forest conservation. Further data collection and selected qualitative studies are expected to complement this report and to shed light on innovative ways legitimate tenure rights could be used to promote conservation goals and contribute to Land Degradation Neutrality in Madagascar.

8 Conclusion

Despite its picturesque landscape and unique biodiversity, Madagascar has huge social and economic disparities. These are often linked to communities' abilities to secure access and use of land for household needs and income. To successfully protect Madagascar's forests and other protected areas, it is important to develop innovative strategies to reconcile conservation measures with the food security goals of adjacent communities. In Madagascar, as in many countries across Africa, it is a daunting task to reconcile the concerns of forest conservation, food security, and community engagement in land restoration, yet this is precisely what is needed to achieve LDN targets and sustain the management of forests and protected areas.

Our research in Madagascar suggests that recognizing and integrating legitimate tenure rights in conservation policies could be the key to reconciling conservation, food security and community investment in land restoration. In and around Ankarafantsika National Park, data reveals numerous tenure concerns among adjacent communities, especially those living inside the controlled occupancy zones. Our findings also highlight the risks to SLM posed by land fragmentation resulting from the growing demand for land. This risk is exacerbated by the wide concern and worry, expressed by adjacent communities, of being forcibly expelled some day from the lands they have lived and worked on, often for more than twenty years.

Comparing the tenure concerns of the communities living inside the controlled occupancy zones with farmers living outside the park, our data show that renting is perceived by the majority of communities as a more secure mode of accessing farmland. For women, this is even the primary mechanism for gaining access to farmland. In the context of the Boeny region, where women account for 51% of the population and head up to 24.5% of households, finding ways to formalise and secure renting and sharecropping mechanisms is an essential step in reducing inequalities and the income gap between women and men and between landholders and land users. Meanwhile, women, especially in the controlled occupancy zones struggle to survive on ever shrinking plots that are too insecure and small to warrant investment in sustainable land management.

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