

# THE DEEP SOUTH



Constraints and opportunities for the population of southern Madagascar towards a sustainable policy of effective responses to recurring droughts/emergencies:

*Socio-economic, historic, cultural, political, anthropological and environmental analysis of Madagascar's southern Region*



## DISCLAIMER

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## ACRONYMS

AEPSE	Programme Assainissement, soins primair e de l'Environnement
AES	Alimentation en Eau dans le Sud
AFD	Agence Française de Développement
AINA	Actions Intégrées en Nutrition et Alimentation
ANEA	Autorité Nationale de l'Eau et de l' Assainissement
ASARA	Amélioration de la Sécurité Alimentaire et Augmentation des Revenus Agricoles
BAD	African Development Bank
BNGRC	Bureau National de Gestion des Risques et des Catastrophes
BP	Before Present
CI	Conservation International
CSA	Centres de Services Agricoles
CSB	Centre de Santé de Base
DELSO	Project de développement de l'élevage dans le Sud Est
ENSOMD	Enquête Nationale sur le Suivi des indicateurs des Objectifs du Millénaire pour le Développement
EPM	Enquête Périodique auprès des Ménages
FAO	Food and Agriculture Organization
FEWS	Famine Early Warning System
FJKM	Fiangona n'i Jesoa Kristy eto Madagasikara
FRAM	Fikambana n'ny Ray Aman-drenin'ny Mpianatra
FRDA	Fonds Régionaux de Développement Agricole
FTM	Foiben-Taosarintani n'i Madagasikara
G4S	Group 4 Security
GIZ	Gesellschaft für Internationale Zusammenarbeit
HIMO	High Intensity Workforce
IFPRI	International Food Policy Research Institute
INSTAT	Institut National de la Statistique
IPC	Integrated Phase Classification
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature (IUCN).
JICA	Japanese International Cooperation Agency
JIRAMA	Electric utility and water services company of Madagascar

## ACRONYMS

MAM	Moderate Acute Malnutrition
MBG	Missouri Botanical Gardens
MNP	Madagascar National Parks
NASA	National Aeronautics and Space Administration
NGO	Non-Government Organisation
OCHA	Office National pour l'Environnement
OMD	Objectifs du Millénaire pour le Développement
ONE	Office National pour l'Environnement
PAEPAR	Projet Pilote d'Alimentation en Eau Potable et Assainissement en milieu Rural
PA	Protected Area
PHBM	Projet de mise en valeur de la Haute Bassin du Mandrare
<i>PERR-FH</i>	Projet Eco-Régional REDD+ - Forêts Humides de Madagascar
PSDR	Projet de Soutien au Développement Rural
REDD+	Reducing Emissions from Deforestation and forest Degradation
SADC	Southern African Development Community
SAM	Severe Acute Malnutrition
SAP	Système d'Alerte Précoce
SLM	Sustainable Land Management project
SPAM	Spatial Production Allocation Model
STD	Sexually Transmitted Disease
UN	United Nations
UNDSS	United Nations Department of Safety and Security
UNFCCC	United Nations Framework Convention on Climate Change
UNPOP	United Nations Population Division
USAID	United States Agency for International Aid
USDoS	United States Department of State
VOI	Vondron'Olona Ifotony
WFP	World Food Program
WHO	World Health Organisation
WWF	World-wide Fund for Nature





# E

## EXECUTIVE SUMMARY

The Deep South is a holistic study which proceeds through a historical perspective of the constraints and opportunities for the populations of southern Madagascar in nine districts within Atsimo Andrefana, Androy and Anosy regions. The objective of this work is to assist the development of the south towards a sustainable policy of effective responses to recurring droughts and emergencies. The key aspects of the study include socio-economic, historic, cultural, political, anthropological and environmental analysis.

The south is classified as semi-arid and influenced by climate change, while recent El Niño events potentially provide a lens for the future. Currently average rain is relatively low at 350mm due to the rain-shadow effect in the south-east of the country attached to the Anosyenne Mountains. In addition, an upwelling located offshore and to the south of Madagascar also induces cold currents limiting the development of clouds along the southern coast. Due to the dry nature of the area, food crops include mainly manioc, maize and beans, although there is limited and localised irrigated rice production in the northern and eastern sectors of the south. While maize remains popular with local people it is not the most suitable crop for this agro-climatic zone. Crops are mainly used for subsistence, while small scale livestock are important for cash including seafood products sold mainly to collectors for export, and hotels or restaurants. Finally, cattle are numerous and hold a major cultural role for the peoples of the south.

Droughts in the south are classified as chronic and have existed in the region prior to the arrival of humans. Meanwhile famines in the area have been recorded since the end of the 19th century. Now climate change poses potential risks and has already increased average temperatures in the region combined with erratic rainfall patterns, which have compounded the effects of droughts, cyclones and the influence of plagues of locusts. From the end of 2015 through 2016 to 2017, the El Niño effect, which occurs every 2 to 7 years provoked a severe drought and malnutrition, appeared to have some of the most severe effects in last 50 years. In total about 30 million people are affected by this phenomenon in dry parts of Africa including southern Madagascar. Future events across the continent by 2050 point to average calorific intakes, availability of fruit and vegetables and meat supplies falling, while mortalities each year will rise due to climate changes, where half of the victims in the future will originate from Africa. Already by 2016, there has been a rise in moderate acute malnutrition in young children from the Deep South. In the south, famine has been reported regularly since the early 20th century and long before global awareness led by various agencies including the United Nations through national and international media outlets.

The inhabitants of Madagascar and the Deep South are principally rural communities dominated by a relatively young population. Health and education of the people and services are relatively poor across Madagascar, but significantly worse in the south. Many people cannot pay medical services with 33% access across the country and only 44% for the southern regions. Meanwhile, nutrition for children has improved in Madagascar, although droughts

in south still have detrimental effects on the young. Vaccinations figures for Madagascar are 51% on average but only 31-37% in the south. Clinics or CSB to people ratios for the south are similar to the rest of country, although they are dispersed over very large areas in south. 13% of CSBs were non-functional in 2013, while the highest numbers of CSBs to be closed to save principally money following the Coup of 2009 were in the south. People who have had an education is on average 44% in Madagascar but only 20% across the south, while literacy rates for over 15 years olds are on average 72% in the country and only 44% for the south.

Poverty, measured by the number of people living on less than US\$1.90 per day (PPP dollar, 2011) shows almost the entire South to be very poor. The poverty incidence is 91 percent in the south compared to 77 percent for the rest of the country. Vulnerability to poverty is greater in rural areas. Climate change impacts have likely exacerbated the situation in the South due to the El Nino drought in late 2016 and early 2017. Agricultural activities suffered and are expected to contract by nearly 6 percent in 2017 compared to 2016.

The peoples, traditions and lands in the Deep South revolve principally around transhumance, semi-nomadic cultures and sedentary agricultural patterns. There are six major peoples in the south with strong cultural links among the Tandroy, Mahafaly and Karembola peoples in comparison to the others Bara, and Tanosy and Tatsimo. Cultural identities are strong and power structures are aligned to communities, clans, lineages and specific families. During the colonial period, the people of the Deep South were taxed but there were few efforts to develop infrastructure in the Deep South, to educate the population or in other ways to improve their situation.

The general history of the peoples of the Deep South is summarized in Box 1.

#### **Box 1. History of the Peoples of the Deep South**

The history, distributions and evolution of populations across the region is thought to have begun with settlers in the south from the 7th century and composed of Swahili traders followed by other migrant groups from the hinterlands. These early civilisations established large Mandas or enclosures on the coast and near river valleys between the 10th and 13th centuries composed of settlers, nationals and traders. By the 14th century people have started to move inland to isolate themselves into smaller settlements during times of local warfare, and did not expand their settlements again until colonial times. By the 17th century, semi-nomadism has become well established with ritualistic attachment between man and cattle. Coastal, trading and fishing become less important, as generally observed in the 21st Century, as peoples looked inland.

However, the peoples of the south were notable cattle traders and merchants associated with their Swahili origins until the 13th century. Later, there was a decline in trade as semi-nomadic cultures evolve with warfare and isolation, reducing commerce across large parts of the south. Trade resumes from the 18th century with exchange of notably cattle for arms by proxy through Tanosy peoples, as other peoples remain reticent of foreigners. In the 19th century, trade expanded between the Europeans and the Deep South, and often with Tanosy people who traded with others peoples from the Deep South, while the Tandroy and others remained rather reserved from engagement. Guns from Europeans are a major trade for cattle and combined with regional and local hostilities. During this period, the people of the Deep South maintain their quasi-independence with the defeat by Tandroy of Merina people's armies attempting to pacify the south and unify the country.

The rebellions against colonials were caused by French adversity to the culture of semi-nomadism, tombs and cattle, rather than taxation and sedentary agriculture. Taxation rebukes in the Deep South continued until the early Independance of Madagascar. The French neo-colonial period contributed to the fall of the 1st President followed by appeasement reactions from the Government at that time, which is similar to responses to Malaso banditry today. Meanwhile, the region has remained virtually isolated from the rest of the country, as reflected by limited safe routes across the Deep South.

The lack of a road network and other infrastructure in the Deep South contributes to its continuing isolation. The poor infrastructure is due in part to the lack of commitment by the elite of the Deep South represented in the capital, and in part to the lack of sustainable impacts of relief efforts. During the wet season (December to March), UNDSS classifies all roads as impassible, and only restricted and critical UN missions are carried out by air. The region's isolation plays a large part in its insecurity, with traditional cattle theft evolving in recent times, into organized crime. This cattle theft was likely exacerbated by criminals delivering cattle to some partially foreign-owned export abattoirs.

Food insecurity is still prevalent due to droughts, irregular rainfall and other impacts of climate change. Rainfall patterns have been changing since the 1930s, becoming more concentrated within the December to March period and much drier during planting seasons. Higher temperatures and evaporation have been clearly observed during the last 15 years, as temperatures and rainfall have become more erratic. At the same time, questionable new crop varieties have been introduced, and preferences for unsuitable cultivation of water demanding maize has evolved. In addition, value chains for crops such as sorghum remain undeveloped. This situation is compounded by the lack of reliable sources of quality seed, as well by lack of both rainfall and effective irrigation schemes.

Access to water is paramount to the survival of the people of the Deep South. An estimate reported by the Inter-governmental Panel on Climate Change (IPCC) states that the proportion of the African population at risk of water stress and scarcity increasing from 47% in 2000 to 65% in 2025, generating conflicts over water, particularly in arid and semiarid regions (Bates et al., 2008), such as the drier regions of southern Madagascar. Since the 1990s, some international agencies have responded to water shortages by providing water to local communities for distribution or means for rain-harvesting, but these interventions have not been able to significantly improve the situation. Meanwhile, the management of water distribution by the Alimentation en Eau dans le Sud (AES) program under the Ministry of Water, and Energy and Hydrocarbons, is regarded as largely ineffective. Most rivers in the south are ephemeral (dry for part of the year), although there is potential to exploit some watercourses in the eastern part of the region, either from the surface or under riverbeds. However, groundwater is of poor quality in many places due to sedentary agriculture. In addition, about 70 percent of the water points (boreholes and pumps) once available in the Deep South had failed by 2002, with the remainder serving only about 20 percent of the population. There has been limited public investment in water infrastructure since 2009, although UNICEF has restored 550 water points since 2014. Overall, there is an important need for depoliticization and decentralization of water management with capacity building to support local people's control of water provision with technical assistance and management structures that foster its sustainability.

With the region's reliance on rain fed agriculture, malnutrition and famine are likely to grow worse during longer and more frequent periods of drought. Others dangers for the south include rising populations, the limited ability of sedentary farmers to move and adapt, and increasing incidence of locusts and other pests. Well-being indicators from 1960 to 2010 have slowly risen, although the number of malnourished children under five years of age in Madagascar across multiple income deciles is likely to increase.

Going forward, options to address food insecurity will need to include more effective irrigation schemes, as well as appropriate seeds and fertilizers. This may require the support of permanent agricultural extension officers, as suggested by some local farmers, rather than the current donor-led Regional Agricultural Development Fund (FRDA) approach, which is short term, unsustainable and can be unreliable as the expertise is sometimes unavailable in some regions for farmers. An Integrated Phase Classification (IPC) for famine alerts, with full regional cover of parts of Africa and Madagascar, is currently being developed. It aims to improve upon the former *Système d'Alerte Pré-*

coce (SAP), which was oriented only to areas near communal capitals, by covering more rural areas and integrating monitoring of agricultural production and climate change. In addition, the IPC will help to avoid confusion on the part of local populations between famine response systems and various development programs across the south. There is also need to move toward private sector investment and diversify economic growth through non-agricultural and commercial options, which are often not seriously addressed or discussed for the south.

The Deep South is also affected by bush fires and deforestation. Fires often occur prior to wet (planting and grazing) seasons to clear existing fields before planting and to improve grazing, while deforestation is principally associated with clearing land for new sedentary crop farming areas. Both fires and deforestation are increasing due to population pressures. Protected Areas (PAs) also create indirect pressures on non-protected forest zones. Burning of PAs has been observed in satellite imagery from 2014.

Land access issues are affected by both land grabs and PAs, and have an impact on local peoples in search of land for cultivation and grazing, particularly in light of the lack of alternative economic activities and limited fertile lands. Some inland cattle farmers are now migrating from the Mahafaly plateau to the southwest coastal areas, where they are permanently settling and demarcating lands. This migration pattern could potentially incite land conflicts with existing communities in these coastal areas.

The loss of dry and spiny forests is a major issue for conservation and biodiversity. Humanitarian organisations have worked with conservation organisations to protect forests, although their efforts are generally regarded by conservation NGOs as ineffective and unsustainable. In addition, local people, including local management committee members attached to Vondron'Olona Ifotony (VOI), do not gain sufficiently from conservation initiatives, since the financing for PA management is often under the auspices of NGOs rather than going directly to villages. During the period when new PAs were being established from 2003 onwards, there was also a significant rise in land conversions from forest to agricultural lands by sisal companies, which continue to compete for land and forested areas with local populations.

In terms of economic development, efforts to integrate the local economy into the country's formal or semi-formal economy have been resisted since pre-colonial times. Nevertheless, the proportion of taxes collected in the Deep South is higher than many other parts of Madagascar, which may indicate a stronger economy could potentially contribute more tax to society compared to the limited wealth returned to the state from rich regions growing vanilla in the northeast of Madagascar. The tax system is highly decentralized, and generally does not benefit communes or villages. Development assistance is often short term, piecemeal and not clearly distinguished from humanitarian or famine assistance. In fact, development and assistance strategies sometimes appear to contradict each other, as when food aid is provided at the same time that exports of crops from the same locality are encouraged.

Local groups have asked to receive aid resources directly instead of through NGOs, in order to take advantage of small commercial opportunities in their localities. Women, in particular, are eager to develop intuitive solutions for their communities, including through cash transfers. This scenario, with appropriate financial and technical assistance, offers potential avenues to support deeper human capital and broader economic development. To be effective, however, such assistance will need to be accompanied by vital support and improvements in basic health and reproductive services; better nutrition, in particular for children; and improved education, beyond just classroom infrastructure. To meet these needs, and help the population to overcome the damage caused by years of criminality and violent conflict, the Government of Madagascar will need to reassert its role in the governance of the region and become a driving force for sustainable and equitable development.





# 01

## INTRODUCTION

### 1. 1

## OVERVIEW OF MADAGASCAR AND THE DEEP SOUTH

Madagascar is in the southwestern Indian Ocean. It has a total area of 587,041 square kilometres (365 square miles) and a coastline of 5,603 kilometres (3,482 miles). The island is divided into 22 administrative regions, of which three regions, Atsimo Andrefana, Androy and Anosy, covering nine biogeographical districts, are referred to as the Deep South.

The topography of Madagascar is varied, with peaks of up to 3,000 meters (9,800 feet) above sea level. The Deep South is hilly in the interior, with plateaus and plains toward the coast, consisting mainly of rolling ancient sand dunes. The country's climate is generally tropical, with regional variations. Average annual temperatures range between 23° and 27°C (73° and 81°F), depending on altitude. Precipitation is determined by the monsoon and trade winds blowing across various parts of the island. However, the Deep South does not receive regular rains from the east, due to the rainshadow effect of the Anosyenne Mountains near the south-east coast. In addition, an upwelling located the southern coast induces cold currents, limiting the development of clouds along the southern coast (Mahatante, 2016). Consequently, the southern area receives as little as 350 mm (14 inches) of rain per year, on average, giving the Deep South a semi-arid climate (Ministère de l'Environnement et des Forêts, 2010).

Although Madagascar's economy is agrarian, much of the land is unsuitable for cultivation because of mountainous terrain, extensive lateralization<sup>1</sup>, and inadequate or irregular rainfall. Only about 5 percent of the land area is cultivated at any one time, of which 16 percent is irrigated. In addition to providing livelihoods for two thirds of the population, agriculture contributes 29 percent of the nation's GDP. The economy also benefits from trade and a small but uncompetitive industrial sector (USDoS, 2011).

Many farmers across Madagascar including the Deep South practice subsistence agriculture on small family plots in rural areas. Crop varieties for small-scale farming across Madagascar include rice, cassava, bananas, maize, and sweet potatoes; however, national yields are generally insufficient to meet domestic demand, and are sometimes declining. Per capita rice production fell from 1.2 tons in 1975 to only 0.9 ton in 2006 (Rapport National d'Investissement Madagascar, 2008). Limited industrial agriculture includes sisal in the south and sugar cane plantations in the northern half of the country.

Slash-and-burn agriculture is common, and results in environmental degradation and forest loss. The technique has been perpetuated by the lack of adequate infrastructure in many rural regions, as well as limited access to information, agricultural inputs, credit and markets (Erdmann, 2003) which may offer alternatives incomes, such as small-scale industries with access to markets. This situation makes adaptation to climate change more challenging, as it restricts options for agricultural diversification.

<sup>1</sup> The weathering process by which soils and rocks are depleted of soluble substances, such as silica-rich and alkaline components and enriched with insoluble substances, such as hydrated aluminium and iron oxides. Often these soils are found in tropical countries.





## 1.2 CHALLENGES IN THE FUTURE FOR AFRICA AND MADAGASCAR

Agriculture in Madagascar is already negatively affected by extreme weather events, including droughts and cyclones, as well as other climate-related disasters, including landslides and locust plagues (FAO, 2000, 2010b). The situation is particularly precarious for populations in the Deep South, where droughts and swarms of locusts are predicted to intensify with rising temperatures and increasingly erratic rainfall patterns. The resulting poor crop yields and the decimation of livestock have been devastating for many communities in the south. Initial impacts of drought from UNICEF showed a worrying increase in moderate acute malnutrition (MAM) within a few months into the famine event, among children between 6 months and 5 years old across 8 out of the 9 Districts of the Deep South. Initial results had shown that the severe acute malnutrition (SAM) across the region was near the 15 percent mark, signalling an emergency situation in terms of nutritional outcomes, although this critical figure had already been surpassed in many communes across the South in 2016 (Box 2).

### Box 2. Effects of El Niño 2015/16

The impacts of the El Niño phenomenon on climate and global agriculture have been well documented; although its effects on health and nutrition have been less prevalent. Droughts caused by events from 2015 to 2016 have led to acute food shortages and malnutrition in many countries across Southern Africa including the south of Madagascar.

The 2015/16 El Niño event was one of most severe episodes in the last 50 years from mid-2015. The phenomenon is affecting the food security of 60 million people worldwide, half of whom live in Southern Africa. In Madagascar, the World Food Programme (WFP) completed several assessments (over nine months in 2015/16) estimating that the number of people exposed to food insecurity was more than 1.3 million in the Deep South and semi-arid lands of Madagascar. Overall, this event provides a lens for countries in the developing world and exposes potential scenarios for the future, as climate change advances.

According to FAO, agricultural and nutritional consequences of this latest episode are being felt acutely across drier parts of Africa, including Southern Africa affecting the lives of 30 million people. The FAO has also identified a number of 'high priority' countries and those 'at risk' in Africa. The latter group includes Madagascar amongst several others in the region. This agency also estimates that it will cost approximately US\$2.3 billion to deal with the effects of the 2015-2016 El Niño events around the world.

The climate impacts were felt until the end of 2016, while the number of people at risk of famine, known locally as kere, will continue to grow. According to a recent study by Oxford University, this type of event may occur more regularly with climate change (Springman et al., 2016). Modelled effects of climate change on global agriculture and nutritional consequences show a reduction in average calorific intake worldwide, a decrease in availability of fruit and vegetables, and falls in meat supplies by 2050. These impacts are expected to cause significant additional mortalities per year, often as a result of malnutrition, of which almost half the cases would come from Africa.

The direct impacts of El Niño in Madagascar have already affected the northern regions of the country, which are experiencing more rain and flooding than usual. Meanwhile the Deep South experienced a drought that was much more severe and broader in scope than was predicted. The effect of the drought on the region is further amplified by the fact that it is one of the most food insecure parts of the country and has experienced several successive years of poor crop yields.

Madagascar is a signatory to both the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. Although the Government adopted its National Adaptation Programme of Action in 2006, institutional progress on climate change has been slow due to limited finances and political uncertainty.

There are a number of UN bodies and partners working in the Deep South, including various NGOs, that have intensified their efforts to address climate change impacts. Their activities include food distribution, cash and food-for-work programs, seed distribution, school canteens, and food supplements for moderately and severely malnourished children. However, given the severity of the drought, these programs are not sufficient for the kind of events that Madagascar has recently faced as they lack means to build resilience and independence from future emergency support. Moreover, the situation is projected to remain dire for some time to come. Discussions with the Government and results from several studies and assessments in the South (see list of references in the annex) indicate that the region's population would continue to need seasonal support during the dry season, as well as assistance for the recovery of people's livelihoods in the future medium term.



### 1.3

## **RATIONALE AND APPROACH FOR THIS STUDY**

This comprehensive study of the Deep South of Madagascar was supported by the World Bank through its El Niño Trust Fund. The study aims to present the socioeconomic, environmental, historic, cultural and political determinants of stagnation of the Deep South, and how those factors have contributed to the region's inability to effectively cope with climate change. The study also looks at emergency responses to famines by aid agencies since the 1990s, and at development projects and programs, to derive lessons that will inform the preparation of more sustainable and resilience building interventions for the Deep South.

The analysis was based on consultations with all parties in the three target districts, including the beneficiaries of various interventions across the south; interviews with key academics (University departments in Toliara and Ambovombe), local and regional government authorities, NGOs and civil society organisations (WWF, Gret, Andrew Lees Trust, CARE...), donors, and aid agency program and project managers; and secondary literature, including articles in the press.

The research was also supported by an ancillary study supported by the World Bank in parallel with this work during 2016. One focused on statistical analysis of secondary data from household and demographic surveys. That study identified the specific differences between the south and to the rest of the country. Analytical results provided an understanding of sources of growth and income, social factors, and the importance of assets such as land, cattle and access to water. Key aspects of the findings are found in section 2 and 3 of this study. The second supplementary study focused on government policies and donor engagements in the South, including poverty alleviation and humanitarian relief programs, with an assessment of why such programs failed when similar programs have succeeded elsewhere in the world.



# 02

## SOCIO-ECONOMIC, ENVIRONMENTAL, CULTURAL AND POLITICAL DETERMINANTS OF STAGNATION IN THE SOUTH

### 2.1 INTRODUCTION

This section of the study provides a snapshot view of key social and economic indicators for Madagascar and the Deep South. It is based principally on statistical analysis of secondary data from household and demographic surveys, as well as on supplementary data from numerous reports cited in the references.

### 2.2 KEY SOCIAL AND DEMOGRAPHIC INDICATORS FOR THE SOUTH

The analysis compares the characteristics of the country and the south using several key indicators:

- population and household demographics;
- health;
- education;
- poverty issues.

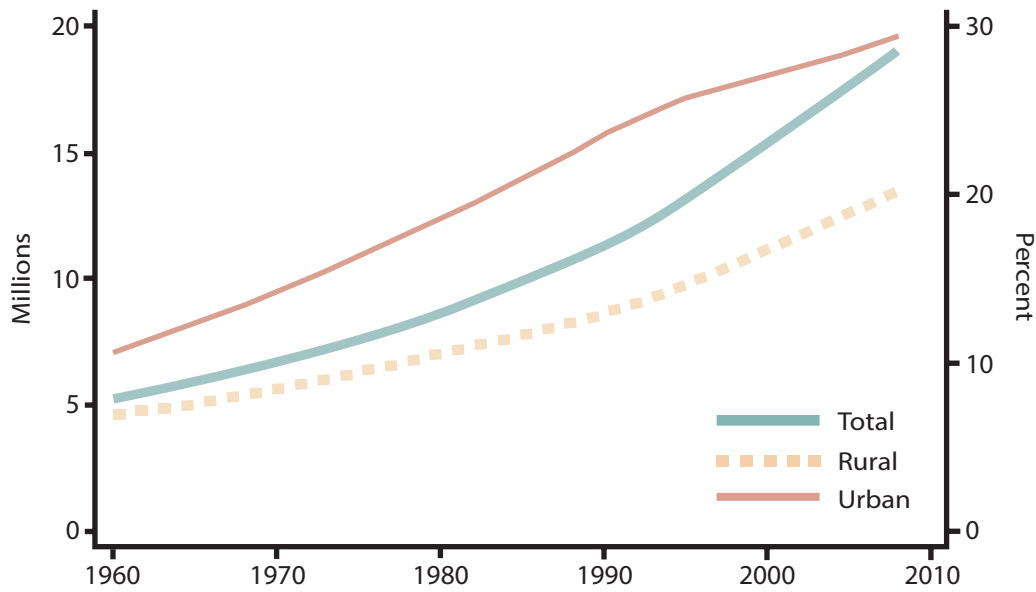
#### 2.2.1 POPULATION AND HOUSEHOLD DEMOGRAPHICS

Madagascar had a population of 23 million in 2016, about 12 percent of whom live in the three regions of the South (World Bank, 2016). Figure 2a shows Madagascar's total and rural population, and share of the urban population. The rural, urban, and total populations have been growing at an increasing rate in the four decades from 1960 through 1999. This growth is attributed to high fertility rates, with improved health services leading to better maternal care and a drop in under-5 mortality.

Over the last 30 years, the country has seen a slight declining growth rate in all population categories, with overall growth at 2.69 percent in 2008 compared to 2.86 percent in 1988, due principally to reduced fertility rates from family planning (Sharp and Kruse, 2011). By 2005, at least 18 percent of women of childbearing age were using contraceptives, and the average fertility rate was down to 5.4 children per woman, although the rate can be as high as 7–10 children in some rural areas (IMF, 2007). Growth trends in the Deep South are comparable to other rural populations in Madagascar; however, some families have significantly higher numbers of children, although mortality figures for their young are also dropping, as they are elsewhere in the country (see Figure 2b).

Most people in Madagascar continue to live in rural areas, although urbanization rate is rising. The urban population constituted 29.5 percent of the total population in 2008, up from 10.6 percent from 1960. The increasing rate of urbanization, coupled with more frequent extreme weather events and the country's low adaptive capacity, poses challenges related to urban water scarcity and diseases from poor sanitation. Only 35 percent of the national population has access to safe drinking water (IFPRI, 2013) in predominantly urban areas. This factor is less significant for the Deep South, which is predominantly rural with relatively small urban communities, although it is imperative to mention that water in general is scarce in the rural areas

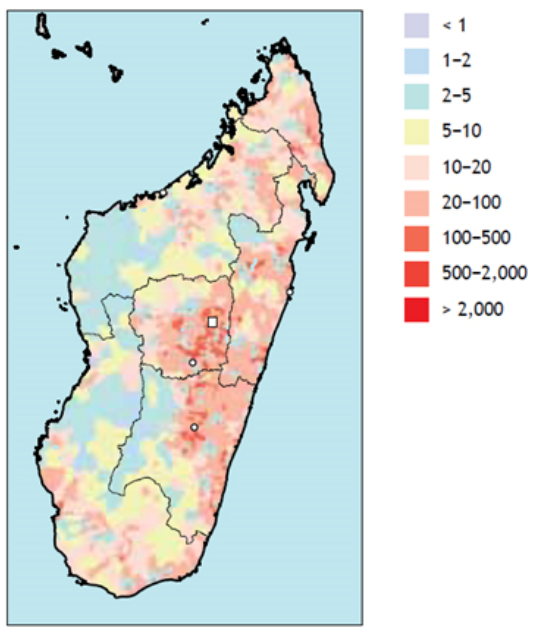
Figure 2a: Population trends in Madagascar: Total population (blue line), total rural population (dotted yellow line), and urban population's percentage growth rate (red line) from 1960–2008



Source: World Development Indicators (World Bank, 2009) & IFPRI, 2013

Figure 2b shows the geographic distribution of the population across Madagascar in 2000 as persons per square kilometre. These estimations are based on census data and other sources. Madagascar has a relatively low population density, estimated at 32.8 inhabitants per square kilometre (PNUD 2010). Generally the population is unequally distributed, with the eastern sectors and central highlands being more densely populated when compared to the western and southern parts of the island with relatively low densities. These densities range from 5 to 20 persons per square kilometre, due to the semi-arid nature of the terrain and lower carrying capacities for people dependent upon rainfed agriculture and free-ranging cattle.

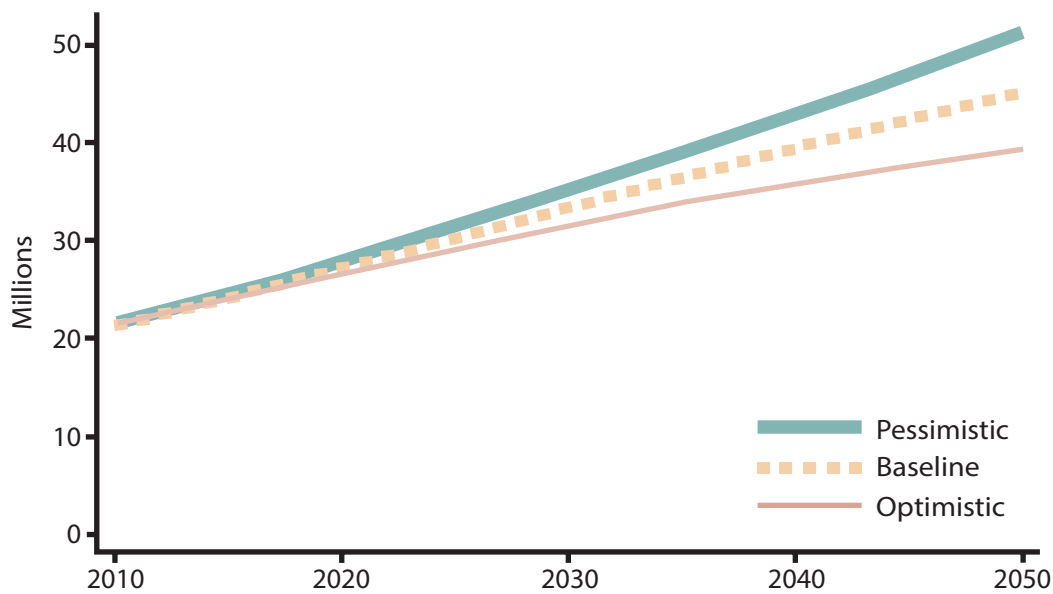
Figure 2b: Population density distribution in 2000



Source: Ciesin et al., 2004 & IFPRI, 2013

Figure 2c shows population projections by the UN Population Division (UNPOP) through to 2050. The projections for the Malagasy population for 2050 range from under 40 million people to almost 52 million people. According to Sharp and Kruse (2011), factors determining health and survival have improved greatly, to the extent that political and economic crises have had negligible effects. Moreover, a substantial proportion of the population is young with high fertility rates, as at least 75 percent of women have had a child by the age of 16. Although awareness of family planning is relatively high amongst teenagers at 45%, although access to these services remains low. Hence it is likely that population growth will follow the high-variant projection, with the population more than doubling by 2050. This scenario is particularly applicable to the Deep South due to low levels of education and lack of access to family planning services.

Figure 2c: Population projection scenarios from 2010 to 2050



Source: UNPOP (2009) & IFPRI, 2013

The figures in Table 2a show high percentages for young people under the age of 15 years across the country and in the south of Madagascar. In the Deep South, the percentage of young people is even slightly higher. Older populations are lower in the south compared to the rest of the country, while unemployment among age groups between 20 and 60 years is also higher. Overall, the demographic dynamic in the south is characteristic of the poorest countries in the world



Table 2a: Distribution of age groups (%) across Madagascar and the south

Indicators Age groups	Southern regions			South	Madagascar
	Atsimo Andrefana	Androy	Anosy		
[0-1[	5.1	5.4	4.7	5.1	3.4
[1-5[	15.6	17.1	16.4	16.2	12.7
[5-10[	17.9	18.8	16.3	17.8	16.0
[10-15[	12.9	16.2	14.4	14.2	14.6
[15-20[	10.0	8.5	8.8	9.3	9.7
[20-25[	7.0	6.0	7.1	6.8	7.5
[25-30[	5.5	4.4	5.9	5.3	6.3
[30-35[	5.7	4.2	5.2	5.1	6.1
[35-40[	5.1	3.6	5.2	4.7	5.4
[40-45[	3.6	3.8	3.2	3.5	4.5
[45-50[	3.1	1.6	2.7	2.6	3.3
[50-55[	3.0	3.1	3.1	3.0	3.6
[55-60[	1.6	2.1	2.0	1.8	2.3
[60-65[	1.3	2.0	2.1	1.7	1.9
[65-70[	1.0	1.2	0.6	0.9	1.0
[70-75[	0.9	0.9	0.9	0.9	0.8
75 +	0.9	0.9	1.4	1.1	1.0

Source: Analyse de la situation socio-économique dans le sud de Madagascar, World Bank 2016

### 2.2.2 HEALTH

In general, disease figures among all age groups across Madagascar and most parts of the South stand at 11 percent. The dominant diseases are malaria, followed by diarrhea and respiratory diseases. The level of sexually transmitted disease (STDs) in the Anosy region of the south is relatively high at 1.1 percent compared to the national figure of 0.3 percent (World Bank, 2016).

The number of medical consultations on average for all age groups is slightly higher in the south, at approximately 42 percent compared to 38 percent nationally, which may be associated with diets and quality of water supplies in the Deep South. People in the Deep South use the medical services even when the cost of these consultations is slightly higher in the region compared to rest of the country, which is effectively an added economic hardship for the inhabitants. However, amongst those who stated that they do not use medical services, higher numbers of people (44 percent) stated the reason was lack of money compared to 33 percent on average across the country (World Bank, 2016). Medical services for most rural communities are often provided by isolated and small clinics or CSBs<sup>2</sup>. Due to the remoteness of modern clinics, many people treat themselves for non-serious illnesses.

Child mortality in Madagascar has improved dramatically, which corresponds with improved nutrition (see Section 3). However, the situation is less favourable in the South's drought and famine zones (UNICEF 2015, 2016). There is little difference in acute infant malnutrition statistics for the Deep South compared to Madagascar in non-famine years (World Bank, 2016). This indicates inhabitants of the Deep South have adapted to their environment, although climate change and repeated drought could be problematic in the future without a sustainable response. The vaccination rate of children in the Deep South is seriously low at 31 to 37 percent, compared to 51 percent on average across Madagascar (World Bank, 2016). Key preventable diseases are malaria and diarrhoea affecting approximately

<sup>2</sup> With regard to facilities across the South, they have approximately 13 percent of the nation's Class 1 CSBs and 12 percent the Class 2 which is proportionally similar to other regions, although the area is large and populations are greatly dispersed limiting accessibility. In addition, in 2013 over 13 percent of these CSBs were not functioning (World Bank, 2016). It is important to also note that the highest number of CSBs to be closed due to financial constraints following the coup d'état in 2009 and ensuing political crisis, where those targeted in the South (pers. com. UNICEF), although the rationale for this change remains unclear.

Secondary education figures are equally concerning. The percentage of individuals in the 11 to 14 year-old cohort (within secondary school age) is 41 percent across the Deep South and 48 percent in Androy, compared to 15 percent in Madagascar. The total rates for secondary schooling in the Deep South for boys and girls, at 30 percent, are significantly lower than for the country at roughly 45 percent. Fewer girls move to secondary education in Madagascar due to early marriages and responsibilities at home, with girl/boy ratios of 0.88 worse in the south than in the country (0.93). Curiously, more girls reach secondary school in the Androy region, although school figures are poor (Table 2d).

**Table 2d: Secondary school indicators for 2011-2012 (%)**

1st cycle for secondary school	Southern regions			South	Madagascar
	Atsimo Andrefana	Androy	Anosy		
Individuals from 11-14 years who have never been educated at school	39.2	48.0	37.7	41.4	14.7
Total rates :					
- Boys	45.0	12.1	36.2	32.1	47.0
- Girls	37.6	13.5	28.0	28.4	43.9
- <b>Both</b>	<b>41.2</b>	<b>12.7</b>	<b>31.8</b>	<b>30.2</b>	<b>45.5</b>
Girl/boy ratios	0.84	1.12	0.77	0.88	0.93

Source: Rapport ENSOMD 2012-2013; INSTAT (Tome 2); World Bank, 2016.

In the last few years, the University of Toliara has created an educational annex in Ambovombe (Androy region) for degree students in the arts and sciences (pers. com., Director of University Annex, Ambovombe). However, this institution primarily benefits the elites and not the vast majority, who have little or no education. It is also important to note that the highest percentage of contractual teachers linked to the parents' associations Fikambanan'ny ray aman-drenin'ny mpianatra (FRAM) is found in the Deep South (pers. com., UNICEF), which means there are fewer civil servant teachers with guaranteed full-time employment to serve state schools. In addition, there may be a greater need for a technical college offering basic skills such as electronics, plumbing, agriculture and livestock farming (pers. com., FAO), which may better serve the local populations in the Deep South.

Madagascar has a relatively good average level of adult literacy at present with a national literacy rate in 2011-2012 at approximately 72 percent for people over 15 years old and above school age (see Table 2e). However, in the Deep South, the literacy rate is very poor at about 44 percent, and only 26 percent in Androy. It is important to add that due to current poor levels of primary education, adult literacy is predicted to decline!

**Table 2e: Literacy rate for population over 15 years old in 2011-2012 (%)**

Literacy rates	Southern regions			South	Madagascar
	Atsimo Andrefana	Androy	Anosy		
Gender :					
Male	54.0	28.3	43.5	45.1	75.1
Female	53.0	24.6	38.4	42.4	68.3
<b>Both</b>	<b>53.5</b>	<b>26.4</b>	<b>40.8</b>	<b>43.7</b>	<b>71.6</b>

Source: Rapport ENSOMD 2012-2013, INSTAT (Tome 2) & World Bank, 2016



## 2.2.4 POVERTY

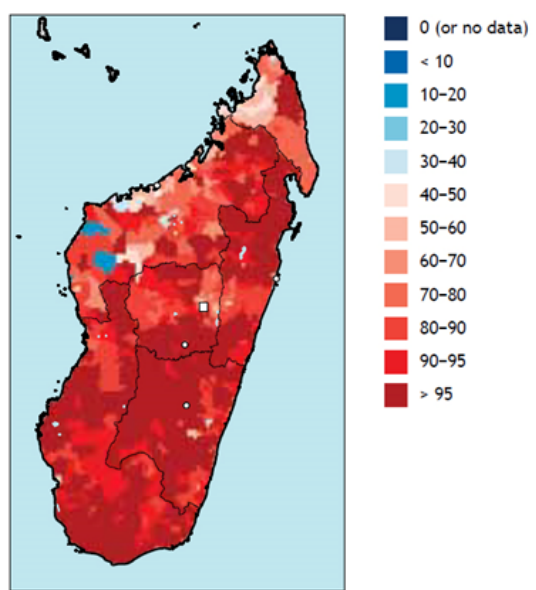
The southern part of the country is significantly poorer compared to some central and northern regions as shown in Figure 2d for the distribution of the population living on less than US\$2 per day across the country in 2005. Moreover the more recent national poverty index Enquête Nationale sur le Suivi des indicateurs des Objectifs du Millénaire pour le Développement (ENSOMD) shows that poverty in Madagascar is extremely high at 71.5 percent for both rural and urban populations in 2012 (Table 2f). By the World Bank definition of less than US\$2/day, poverty is even higher was 82 percent in 2010 compared to approximately 70 percent in the 1990s. This recent effect may be accountable in part to the effects of the coup in 2009 and climatic events across the country.

Table 2f: Poverty incidence (P0) and poverty intensity (P1) in 2012 (%)

Rural or urban areas	Southern regions			South	Madagascar
	Atsimo Andrefana	Androy	Anosy		
Urban	P0	19.9	-	64.9	48.5
	P1	8	-	27.4	18.1
Rural	P0	89.3	96.7	88.8	77.3
	P1	49.6	63.8	49.8	36.4
Both	P0	80.1	96.7	85.4	71.5
	P1	44.1	63.8	46.6	32.8

Source: ENSOMD 2012, INSTAT & World Bank, 2016

Figure 2d: Poverty in Madagascar c. 2005 (% of population below 2\$/day)



Source: You et al., 2010 & IFPRI, 2013

Note: Based upon the 2005 US\$ and purchasing power parity value.

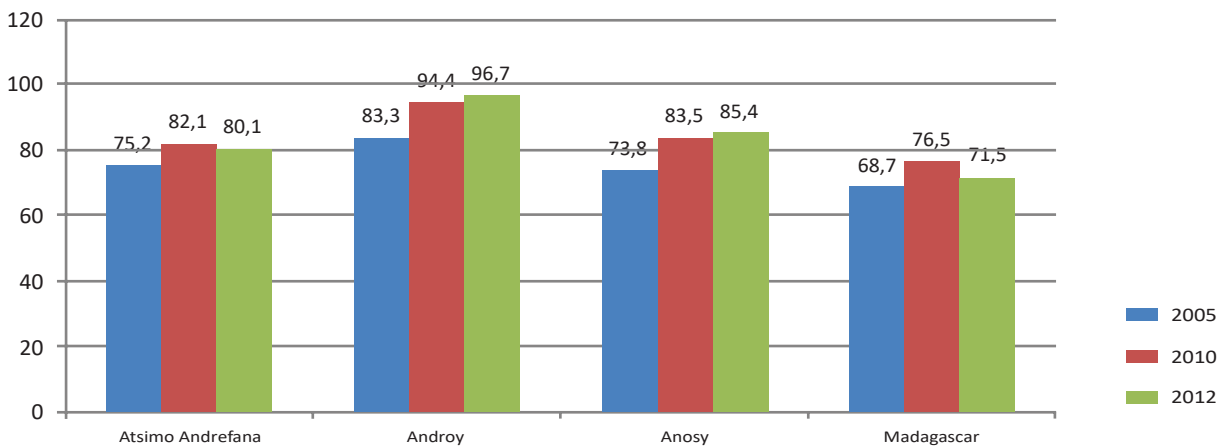
The situation has deteriorated since the coup of 2009, with 90 percent of the population classified as below the poverty line in Madagascar in 2016 according to the World Bank for those living on less than US\$3.1 per day. Prior to 2016, vulnerability was also identified in 2011 as also being greater in the rural areas, where 74 percent live in poverty compared to 54 percent in urban areas (Sharp and Kruse, 2011), which will certainly

be the similar until now. In addition, the state in 2007 prepared a Vision 2025 for Madagascar which showed that the eastern, southern, and south-eastern parts of the island had poverty rates of more than 80 percent (Figure 2d). The lowest proportions of poverty are in the western parts of the country, where about 20 percent live below the poverty line. High poverty levels suggest that there will be a generally low level of resilience to climate change in the future as indicated by IPPRI in 2013.

The data also show that rural people across the country are poorer than urban dwellers (Table 2f). Curiously, the Deep South has a 91 percent poverty rate compared to 77 percent for the country, although there are fewer poor in the towns of the south.

The evolution of poverty is particularly noticeable in the Androy region, which has steadily increased since 2005. When poverty rates for each region are compared to Madagascar, it is clear that the Deep South is poorer (Figure 2e).

**Figure 2e: Evolution of poverty for the periods 2005-2010-2012**



Source: ENSOMD 2012, EPM 2010, EPM 2005, INSTAT & World Bank, 2016

The data show a clear association between poverty and various socio-demographic characteristics (Table 2g). In particular, higher numbers of people in a household have an almost exponential effect on poverty, as do lower levels of education. Poor and uneducated parents have uneducated children, creating an endless vicious circle of poverty. Again, the situation is much worse in the south.





# 03

## SOCIO-ECONOMIC, ENVIRONMENTAL, CULTURAL AND POLITICAL DETERMINANTS OF STAGNATION IN THE SOUTH

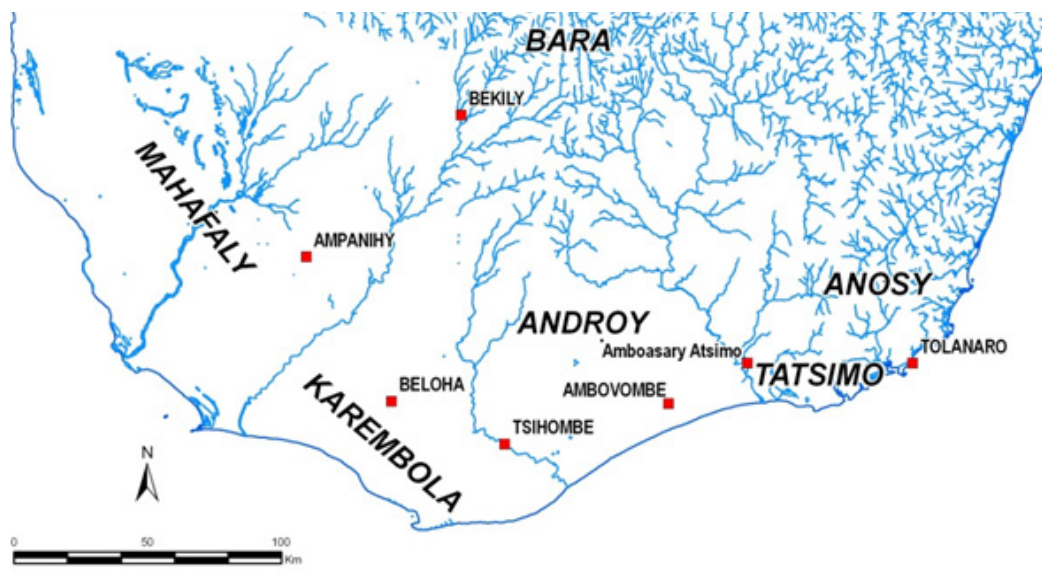
### 3.1

### PEOPLES, TRADITIONS AND THEIR LAND: TRANSHUMANCE, SEMI-NOMADIC CULTURES AND SEDENTARY AGRICULTURAL PATTERNS

#### 3.1.1 PEOPLES OF THE DEEP SOUTH

The Deep South of Madagascar is home to six principal ethnic groups, each of which dominates a specific part of the South (Figure 3a). The issue of ethnicity is compounded by former colonial divide and rule policies and their definitions of ethnic differences. These policies essentially divided highland and coastal peoples, leaving a legacy of independence and mutual suspicion that persists today. These factors are particularly important for the Tandro, who maintain their traditions and sense of independence, and are regarded as an important group for conserving some traditional Malagasy customs which have been lost or changed elsewhere in the country<sup>3</sup> (pers. com., Steve Lellilad).

Figure 3a: Peoples in the Deep South



Source: Parker-Pearson, 2010; FTM hydrographical maps for Madagascar

Figure 3a provides approximate areas where the Tandro (Anosy) inhabit from the rainforest to the transitional zone of the Anosy Mountains and dry spiny forests in the southeast. The Tandro live in the semi-arid zone to the west of the Tandro as far as the Mandrare River (Rakotoarisoa, 1998). The central area of the Deep South is the territory of the Tandro (Androy), who live between the Mandrare and Manamabovo rivers near Tsihombe. To the west of this zone and near the coast are the Karembola people. In the far west are the Mahafaly people, located on a plateau and as far as the southwestern coast. Only 60 percent of the dialect in the south overlaps with mainstream Malagasy (Lewis, 2009).

<sup>3</sup> The Tandro people ("People of the Thorns") derive their name from the spiny bushes ("roy") growing in the region. Due to their strong self-identity, the Tandro are some of the most researched people of Madagascar, with studies found in pre-colonial works by Flacourt and numerous ethnological and anthropological works from colonial times to the present. Their culture is identified predominantly by patrilineal ancestry and idealized through a projection of their individuality and customs, where non-Tandro may be regarded as outsiders or foreigners.

The Karembola and Mahafaly often identify themselves as Tandroy when traveling outside the south. The Tandroy consider the Karembola to be ethnically Tandroy, although they have for centuries been recognised as distinct peoples with their own cultural practices (Flacourt, 1661). An important cultural practice which distinguishes the Tandroy from others in the Deep South is circumcision, or savatse which declined in the culture of the Karembola peoples in response to their suppression since the colonial regime (Middleton, 1997). To the north of the Tanosy and Tandroy peoples are vast savannah plains inhabited by the Bara, who are mainly pastoralists.

The societies in the Deep South have important rituals, taboos and hierarchies. Age is an important factor in decision-making, as elders represent spiritual linkages with ancestors. Clans and lineages play a dominant role in decision-making, particularly about land and resources. In these societies, the clan that established a village often has a say over newcomers and dependant clans, and some lower clans may be marginalized. In general, family heads are male and control the household and most of its resources. There are also alliances between clans, and sometimes fictive kinships such as those between the Tandroy and Tanosy. Lineages have a strong sense of solidarity and include lineage allies, matrilineal bonds and patrilineal links often attached to land (United Nations, 2011). These factors of power in the Deep South are so strong that the French researcher Paul Ottino in 1998 once stated:

*To avoid conflict, the young, the poor, women, all those with a mouth which is known to not speak lightly, are condemned to silence.*

Polygamy is practiced among the Tandroy and reinforces alliances and bonds among families and clans, leading to political and economic advantages, including access to pasture during periods of transhumance. This is the process of traveling to different grazing lands, whereby cattle are moved over large distances and in their footsteps the semi-nomadic peoples of the Deep South. Meanwhile, polygamy may involve a man with 4 or even 12 wives, although the first wife often has seniority over the others. Women in a polygamous relationship often play an important political and economic role in the society, as they assist their husband with decisions affecting various clans attached to them.

The importance of cattle for the Tandroy and other peoples of the south, notably the Bara, Mahafaly, and Karembola, is not only a secular means of accruing wealth, but can also assure a comfortable afterlife. It is important to recognise that cultural belief in a hierarchical spiritual world is very important, where sacrificed animals accompany the spirit of the dead. This factor may not be accounted in development scenarios where well-being and income-generation objectives could conflict with investments, such as tombs. Often cultural attachments may not always be interpreted into socio-economic development models by projects or programmes. Not only are numbers of cattle deemed important, but also ancillary factors including the depth of cattle dung in their corrals. Effectively, this custom may not be conducive to using the dung as a form of compost on fields to encourage better crop production as prescribed by some development projects. While for many Tandroy, a man without cattle is often regarded as not a Tandroy.

### **3.1.2 CATTLE AND TRADITIONS**

The importance of cattle for the Tandroy and other peoples of the Deep South, notably the Bara, Mahafaly, and Karembola, is not only a secular means of accruing wealth, but also assurance of a comfortable afterlife. A Tandroy man without cattle can be considered a nonperson. Sacrificed animals accompany the spirit of the dead, and tombs are investments in the afterlife. Not only are numbers of cattle deemed important, but also ancillary factors such as the depth of cattle dung in corrals. These cultural practices can be in conflict with development projects that stress the use of dung as fertilizer to increase crop production.

To the east of the Deep South the Tanosy and Tasimo peoples have for a long time practiced cultivation of their lands, due to a relatively better climate in the eastern sector. Initially this was an advantage for the colonial regime during the process of controlling and appeasing the native populations and also offered significant rewards in tax collection.

Colonial pressures upon local people were effectively a form of social engineering pushing populations into a combination of sedentary and pastoral existences. Then, the lands adopted by pastoralists were capable of agricultural production although the nature of semi-arid lands meant unpredictable and inevitable droughts leading to famine or kere.

The situation today is no different from the past, where there is a cultural need for pastoralism, although many people are tied to cultivation. Development programmes for good reason try to improve a situation which was not the doing or invention of peoples at that time. Meanwhile droughts persevere resulting in foreign interventions combined with development to appease the generated situation, which is likely to become worse with climate changes in the future.

## **3.2 HISTORY, DISTRIBUTIONS AND EVOLUTION OF POPULATIONS ACROSS THE REGION**

### **3.2.1 ARRIVALS IN THE SOUTH**

The island of Madagascar was originally populated by waves of migrants from both Africa and Austronesia (Allibert, 2008). Fragments of pottery found near the mouth of the Menarandra River and finds from former settlements near the Manambovo River indicate that the Deep South may initially have been colonized by East African Swahili communities during the period AD 600-1000 (Parker-Pearson, 2010). The site also may have been a trading settlement for Swahili merchants from the 7th to 13th centuries, long before European traders used the Mandrare estuary in the Anosy region during the 19th century.

Stories of early occupations of the Menarandra area are part of the oral history of the Taifasy people, who live north of Fort Dauphin (Tolanaro) in the south-east. They recount wars in Africa that caused people to migrate to an unknown land at the mouth of the Menarandra River (Fontoynt and Raomandahy, 1939). These stories are also consistent with archaeological finds near the mouth of the Manambovo River and at the site of the earliest recorded settlements, starting in the 10th century. There is also an alternative theory that most of the Deep South was colonized, also during the 10th century, by some people from western and southwestern coastal communities of Madagascar (Parker-Pearson, 2010).

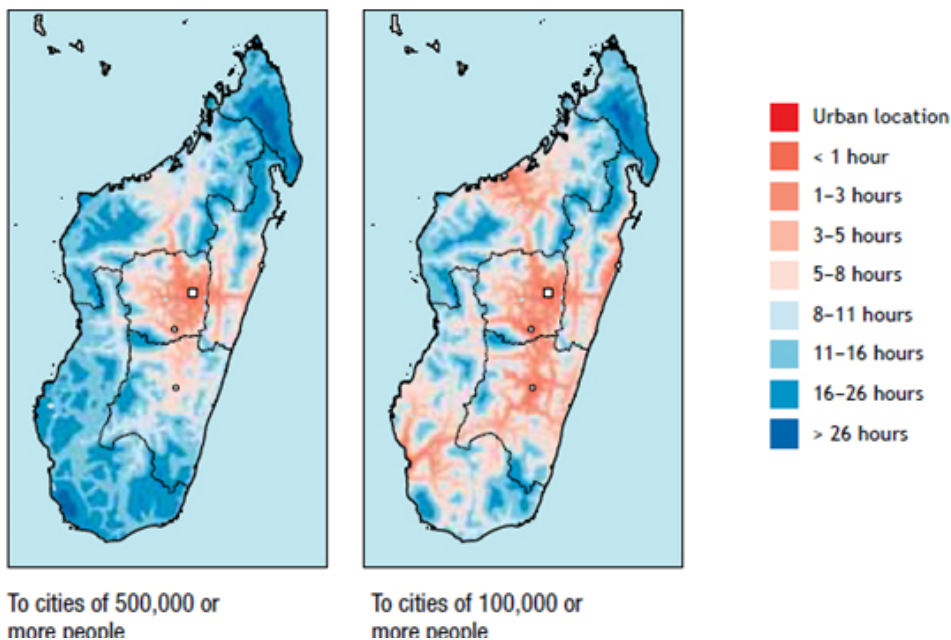
The first peoples to settle in the region would have brought domesticated cattle. The most common species in Madagascar today is *Bos indicus*, the humped zebu; however, foreign accounts from the early 18th century also mention wild humpless *Bos taurus* roaming throughout the spiny forests of the south (Drury, 1729). These humpless animals may have been feral vestiges of the first herds introduced into Madagascar from Africa, while zebu cattle arrived with later migrations into the south (Blench and Macdonald, 2000). In addition to introducing cattle to the Deep South, the first settlers may have driven to extinction a giant ostrich-like bird known as *Aepyornis* (Elephant Bird) that inhabited remote parts of the south, referred to by Flacourt in 1661, by overconsumption of their eggs.

in the country, including in the education system (Brown, 1995), which gave the government the appearance of being a puppet regime. Also in 1971, an outbreak of anthrax in the Deep South and southwest region decimated herds of cattle. This disaster, followed by a prolonged drought, led to severe famine among the Tandroy and Mahafaly peoples. At the same time, the tax collectors, paid on a commission basis, were unrelenting in trying to collect taxes even on cattle that had died during the epidemic and the drought. A revolt led by a Malagasy Lutheran pastor resulted in the death of about a thousand people and the jailing of up to five thousand others (Brown, 1995). Afterward, government ministers toured the Deep South and issued pardons to those who had been involved in the revolt. Nevertheless, this event led to the downfall of President Tsiranana in 1972. Since that time, the leaders in the south have often been at loggerheads with national political leaders, which has played a part in the lack of development of the region.

### 3.3.3 ACCESS TO MARKETS AND TRANSPORT

The road network in the Deep South is very poor and not uniformly distributed, which means that access to markets in larger towns is slow and costly (Figure 3b). Extreme climate events such as flooding can also lead to increased transport costs.

Figure 3b: Access to markets in larger cities or towns



Source: Adapted from IFPRI, 2013

There has been little investment in the road network since colonial times (Figure 3c). There are no national roads in good condition, and the majority have never been tarred since their demarcation by the French. The only tarred road is the stretch of RN13 road from Fort Dauphin to Ambovombe; but it has been highly degraded for almost 20 years and has completely eroded away in many places. Due to recent changes in the political regime, the country lost funding for the development of the RN13 (Ihosy to Fort Dauphin), which has led the road to degrade even further and become more problematic and costly to rebuild. The RN10 (Ambovombe to Toliara) also has not been improved since colonial times.

Figure 3c: Road networks across the south



Source: FTM:1:500,000 scale regional maps, 1990

The secondary roads are of variable quality. They can be good in the sandy areas of the littoral zone and poor on undulating and clay soils, which may be prone to flooding and erosion. These roads have often been used for famine relief over recent decades. There is no applied regional road strategy, but often minor roads are restored by local peoples, as a means for donors and NGOs to provide cash the famine victims through High Intensity Workforces (HIMOs).

Generally, due to the sandy soils and dry weather, most trucks and four-wheel drive vehicles can move at a steady pace along the secondary roads. However, the backbone routes for regional and national trade, including the RN10, RN13 and RN12, are very poor and likely to damage vehicles, which increase the costs of maintenance and of transporting goods and passengers. In addition, as vehicles move slowly on main roads, they are at a higher risk of attack by bandits, notably on the northern sections of the RN13 and western sections of the RN10.

### 3.3.4 SYNTHESIS AND DISCUSSION

The identity of the peoples of the Deep South began to take shape in the 18th and 19th centuries through isolation and warfare to defend transhumance and their semi-nomadic existence with the cultural importance of zebu cattle. They traded among themselves and with foreigners near the coast, and took occasional shipwrecked sailors as highly prized slaves. A significant step towards quasi-independence began in the early 19th century, when the Tandroy defeated the Merina, who were attempting to pacify and unify the country.

Later, with the onset of French colonialism, the peoples of the Deep South again proved defiant, particularly against the tax system, which was imposed on non-monetary peoples whose wealth was often in cattle. Even after independence, a revolt over taxation may have led in part to the downfall of Madagascar's first president. The population also began to suffer more from drought and famine. In recent decades, the international community has assisted the south with aid programs, but these programs have not been accompanied by any kind of sustainable development strategy or programs to integrate the Deep South with the rest of the country.



## 3.4 INSECURITY, INSTABILITY AND BANDITRY EVOLVING FROM TRADITIONAL CATTLE THEFT TO ORGANIZED CRIME AND TERRORISM

### 3.4.1 INSTABILITY TO INSECURITY

This section explores the link between political instability and insecurity, with lawlessness and an ineffective state providing opportunities for rural banditry, armed criminality and recruitment by international terrorist organizations. These troubles are not new, but they have been exacerbated by the political crisis of 2009. The triad of a dysfunctional security sector, lack of a functioning state apparatus, and dynamic predatory actors are at the heart of the interrelated phenomena attached to insecurity (Jutersonke and Kartas, 2011).

### 3.4.2 CATTLE BANDITS AND INSECURITY

The political crisis of 2009 has had lasting effects. Large-scale cattle rustling in the Deep South has been increasing, orchestrated by politically influential people known as *malaso col blanc* (white collar bandits). In addition, national roads have become unsafe, and travel along certain sections, including the RN13 from Ihosy to Ambovombe, has to be done in convoy and sometimes escorted by the *gendarmerie* (Andriamarohasina, 2010). During 2016, several minibuses were attacked in northern sectors of the south known as *zones rouges*, or no-go zones, with reported fatalities. The *zones rouges* encompass large areas of the Deep South that are often inaccessible to security personnel due to rough terrain and a fragmented road network. These areas are also difficult to reach for disaster relief.

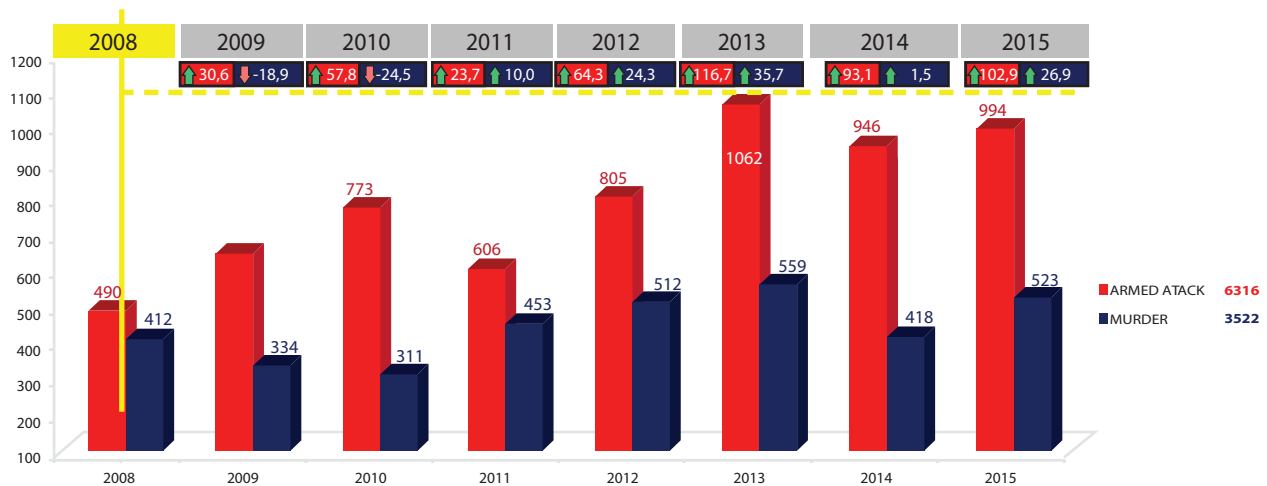
The most persistent source of insecurity in the Deep South is cattle rustling. In 2001, an estimated 1.78 zebus were stolen per week per commune, equivalent to 130,000 stolen zebus per year across the country (Fafchamps & Minten, 2004). These numbers correspond with the large populations of zebu cattle in the western savannah grasslands of Madagascar and the Deep South. It also appears that the *malaso* phenomenon involves collusion with some elements of the armed forces and organized crime (Madagascar Tribune, 2010; Jutersonke and Kartas, 2011).

### 3.4.3 MALASO AND ORGANISED CRIME

Some have argued that the activities of the *malaso* (bandits) constitute a ritualized form of cattle raiding associated with young men's traditional rites of passage. However, cattle theft has become more associated with organized crime over the years due to the insecurity in rural areas, which has enabled to *malaso* to falsify documentation of cattle, hide large numbers of cattle among the herds of wealthy cattle barons, and organize the eventual transportation of animals across the country (McNair, 2008; Fauroux, 1989). Crime syndicates are also responsible for the circulation of weapons, principally AK-47s (Madagascar Tribune, 2010). Therefore, it is likely that some members of the security forces are working in collaboration with the *malaso* (Jutersonke and Kartas, 2011). In the south, the cattle theft rings sometimes also take women and children as hostages and burn down their victims' houses (Madagascar Tribune, 2010).

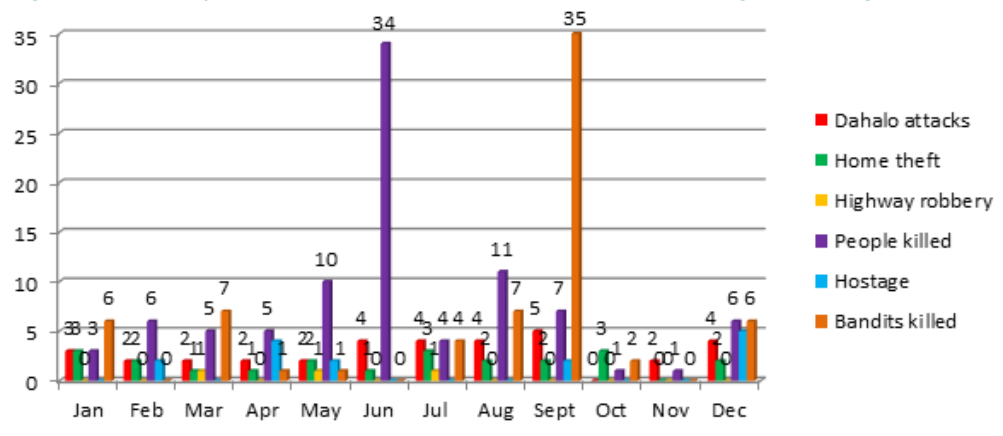
The main impediment to reducing the number of cattle raids is the lack of policing, including investigative capacity and means of transportation for the security forces. None of the *gendarmerie* outposts have access to helicopters and few have functioning vehicles (Jutersonke and Kartas, 2011). The larger problem, however, is a lack of political will to act against the power and influence of the *malaso col blanc* (white collar bandit).

Figure 3d: Evolution of crime trends in Madagascar for 2008-2015



Source: Group 4 Security (G4S), Madagascar, 2016.

Figure 3e: Monthly trends for various crimes for three southern regions during 2015



Source: G4S Security Madagascar, 2016.

### 3.4.4 RECRUITING FOR TERRORISM

Since 2015, UNDP and Interpol have been monitoring infiltration into the country by extreme Islamic organizations. There has been an increase in foreign imams visiting parts of the Deep South and southeast and the construction of new mosques by outsiders; and an arms cache was discovered in an isolated part of the Deep South. The objective of the groups is to recruit potential collaborators from poor communities in Madagascar including the Deep South (pers. com. UNDP). In 2016, there were reports in the local media of the arrests of several imams in the southeast, who were deported from the country (Gazette de la Grande Ile, 2016).

### 3.4.5 SYNTHESIS AND DISCUSSION

Cattle theft has long been an issue in the Deep South. This situation has been aggravated by political instability and the establishment of partially foreign-owned abattoirs, which buy and butcher stolen cattle for export.

In an effort to counter the problem of insecurity, the state administration has encouraged the organization of village self-defence groups and has tolerated the efforts of indigenous private security companies to hunt down the malaso. These retributive responses to banditry have caused escalating violence by the malaso and dramatically increased

this new approach does not represent a return to centralized management (Marcus, 2007). Rather,

...the answer lies in a better understanding of the state-local nexus...the decentralization process would be more successful if the state sought to determine what it can do best (presumably with international assistance), and what the community can do best (although, decentralization should not negate the responsibilities at state, regional, district and communal levels). This is a capacity question rather than a question of power...communities need to be viewed as a complex mosaic of relationships...Only once the state accepts the diversity and power inherent in the community and engages with it, can it hope to see a completed decentralization process with net local gains (Marcus, 2007).

In addition to the management and capacity problems of the water administration, many potable water and irrigation schemes over the years never came to fruition due to the political marginalization of the peoples of the Deep South, in particular the Tandroy. Some, like Father Francois Benolo of Madagascar's Catholic University, also blame vestigial colonial sentiments, as expressed in a 1901 report to Madagascar's former French governor:

One walks in...a forest of trees without leaves,...of large sinister stumps... [T]here is no water, it rains almost never... [H]e who controls the water controls the population (Lyautey, 1935).

Although the Deep South is relatively poor and has never been of great importance to the country, it does have mining resources, including mica and precious stones. However, these resources have never been used to help populations in the Deep South address water issues in their localities.

The Government is in the process of restructuring AES as an agency that oversees the private management of water supplies with local communities. However, this will only be successful if transparent processes are adhered to and the elite are not allowed to interfere in the process (pers. com., Diorano-WASH).

The principal foodstuffs eaten by people in the south include staples such as manioc tubers and leaves, maize and sweet potatoes, as well as peanuts and local beans such as antaka, voanemba and tsaramaso, which are highly nutritious and well suited to the dry littoral zones of the Deep South. Villagers also grow and consume chickpeas and, to a lesser extent, sorghum (ampemba) and millet (Parker-Pearson, 2010). Rice production is limited to the



## 3.7 MALNUTRITION AND FAMINE ASSOCIATED WITH CLIMATE CHANGE

### 3.7.1 HISTORY OF NUTRITION IN THE SOUTH

slightly humid eastern areas or is imported from other parts of the country. As it is scarce and expensive, rice, like meat, is usually only consumed on special occasions.

Food consumption in Madagascar is dominated by starch-rich products, while foods with proteins and vitamins are limited, which leads to a higher risk of malnutrition, in particular for children, as discussed in the following section and presented in Table 3b

**Table 3b: Annual consumption per capita of principal food products (kg)**

Source: ENSOMD, 2012; INSTAT; World Bank, 2016.

Note: Consumption per capita is presented in descending order from highest to lowest for the Deep South

Principal foods	Southern regions			South	Madagascar
	Atsimo Andrefana	Androy	Anosy		
Rice	41.5	14.1	43.7	36.1	71.5
Maize	28.3	28.6	33.2	28.8	21.9
Manioc	166.3	74.6	45.1	127.4	38.2
Sweet Potatoes	9.4	26.0	21.0	15.6	8.0
Potatoes	6.5	11.9	4.6	6.2	7.3
Dried beans	6.3	2.8	23.9	11.9	6.5
Lentils/Voanjobory	4.6	2.4	5.3	4.3	3.4
Fruits	9.9	2.1	7.0	8.0	6.2
Vegetables	8.5	4.1	6.9	7.3	9.4
Red Meat	2.9	1.2	2.4	2.4	2.8
Poultry	2.4	1.2	1.9	2.1	6.2
Fish	4.6	1.2	2.1	2.1	5.0

Table 3c shows that the Deep South produces significant amounts of sweet potatoes followed by manioc and maize.

The Deep South consumes less manioc and sweet potatoes than it produces, but is a large regional importer of maize each year (World Bank, 2016). As previously mentioned the emphasis is on high starch products as well as an orientation to maize imported from other parts of the country. Imports will be costly, while regional production of maize in the drier parts of the Deep South is often not appropriate for the climate. During periods of drought and famine, traders from within the Deep South and outside will move to regions to sell principally manioc and sweet potatoes, when the prices will often rise and add further socio-economic burdens upon those already suffering from drought.

**Table 3c: Percentage of national crop production from the Deep South in 2012**

Crops	Maize	Manioc	Sweet potatoes	Rice
% of national production from the South	27.8	38.6	43.7	6.4

local consumption. These crops rarely reach local markets due to limited production and demand. Food is often cooked without salt, which is regarded as taboo, particularly for rice and maize. This tradition is likely to limit the population's intake of iodine, which is added to commercial sachets of Malagasy salt to compensate for lack of and need for iodine in people's diets. This salt is available from small shops in some villages across the Deep South. Local supplies of mined salt are found in the Betsioky district of the South and other areas, although this supply does not contain iodine.

Records from the 18th century of crops grown in the Androy region include tobacco as well as maize, millet, sorghum and beans (Drury, 1729). Meanwhile, records from the 19th century include millet, gourds and squashes, and prickly pear cactus (Grandidier, 1868). This cactus was introduced by the French in the 18th century for the defence of its supply outpost in Fort Dauphin, and later by the 20th century adopted by Malagasy to repel the colonial French forces. Moreover cactus fruit has been an effective and sometimes lifesaving source of food and water during periods of famine and drought. Cattle can also get food and water from the cut leaves after the spines have been burned off.

Cow's milk may be available during the wet season, depending on the rains from February to March. Milking is usually done by men. Women may later convert the milk to curds and whey (habobo) using cattle urine or tamarind juice. Milk and milk products are scarce commodities, not part of the staple diet, but used mainly for hospitality, mixed with water or honey.

Meat from cattle and small livestock can be bought in the market, but is generally eaten only when an animal is sacrificed for special occasions. This is especially true for zebu meat (Parker-Pearson, 2010). Small livestock such as goats, sheep and chickens are used for hospitality or sold as a means to acquire cash.

Dry and spiny forests across the south are a significant source of food during periods of famine. The most significant wild products include honey, a variety of wild tubers and sometimes tenerecs, small native mammals about the size of a hedgehog.

Although most peoples of the Deep South live only one or two day's walk from the coast, marine resources remain under-utilized as they were during the colonial period. The French colonial administrator (Decary, 1930) observed that marine resources were often regarded as taboo, principally by the Tanosy people, although exploitation was limited in general. Even today, fishing is often confined to coastal reefs and lagoons, for mainly near shore wild fish stocks, and the collection of wild lobsters and prawns for some hotels and predominantly for export. The possibility of commercial coastal fishery development is being considered by UNDP and BGNRC. The Head of the Androy Region also wants to develop coastal infrastructure and commercial fishing fleets to exploit offshore fishing resources.

International agencies, notable UNICEF and some NGOs, have also provided some areas with modern wells and hand pumps to enable villagers to access sweet water deep under the surface. Water closer to the surface is often salty or polluted, and needs to be purified using ash, while leafy branches from Tamarind trees are used to cover buckets, although these processes do not rid the water of bacteria, including E-coli. Sweet water is also sold in containers in public areas. Water is such a precious commodity that it is sometimes offered as a gift.

Poor nutrition and unclean water can compound the risks for children and pregnant women who live far from medical facilities, which are located principally in the regional capitals of Ambovombe and Fort Dauphin. Often a female relative

will serve as a midwife during the birth process. During and after breast feeding, babies are often fed a mixture of cow's milk and water to supplement their diets, which can cause diarrhea in the infants. Mothers return to carrying water and working in the fields within a few months of the birth, often with the infants on their backs. As a result of the harsh conditions for mothers, the maternal mortality rate is high, and many new-borns may not live for more than a year.

It used to be taboo to discuss the death of a child (Frère, 1958). During a focus group meeting for this study, however, women in a famine-stricken area in the littoral zone complained about aid agencies trying to save those who are dying. One woman, from an association for women engaged with various NGO activities, went so far as to exclaim with force:

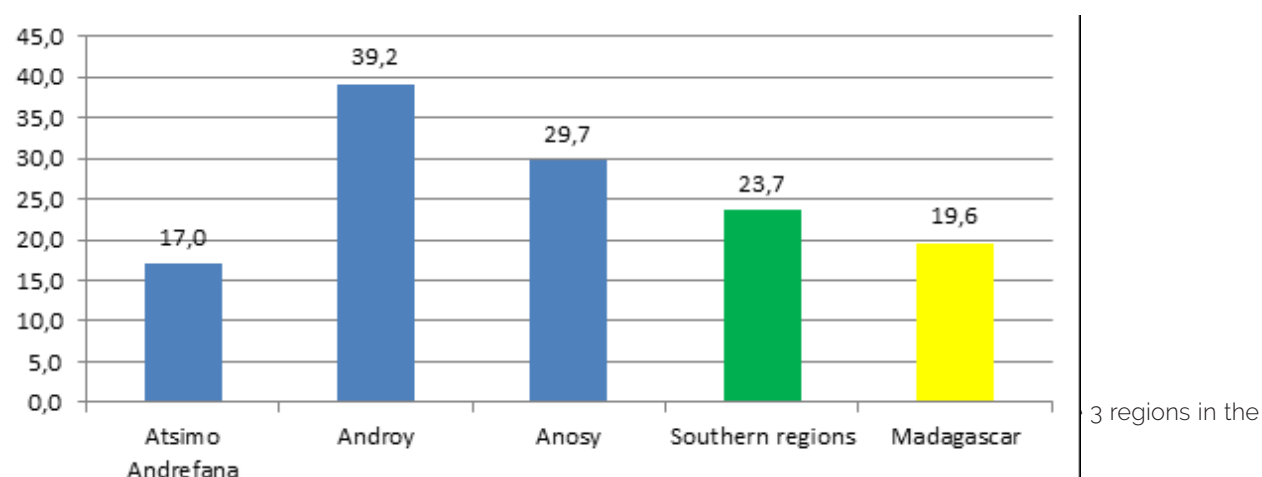
*“Why do aid agencies focus on the weakest children in our villages who will die anyway? They should focus on those who are suffering and will live!”*

Some agencies offer food and nutritional supplements for babies, such as the Plumpy Nut from UNICEF, while there is evidence that these interventions could encourage competition among desperate mothers (pers. com. UNICEF). UNICEF also stated in 2016 that some weak children were kept weak in order to maintain rations, which are shared among the household.

Poor households in the Deep South spend, on average, 75 to 80 percent of their resources on food, which reinforces the poverty trap associated with day-to-day survival for most of the population. This poverty trap is reinforced by the dependence on subsistence agriculture (Figure 3v). In Androy, for example, 40 percent of subsistence production is consumed by the household, leaving little to sell for income, particularly during periods of drought (World Bank, 2016). This dependency on subsistence agriculture for both food and income is therefore a systemic factor for famine.

**3.7.2 FOOD, MALNUTRITION AND THE POVERTY TRAP**

Figure 3v: Role of subsistence production in total household consumption (%)



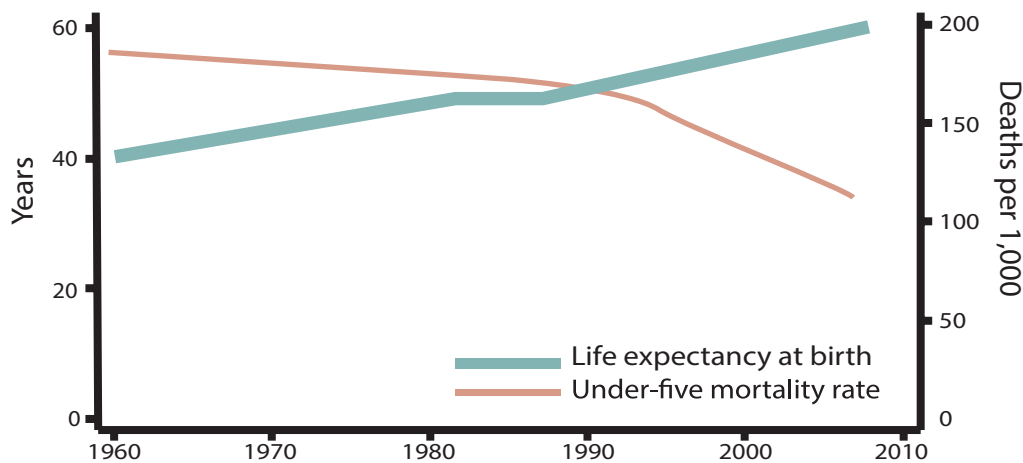
Madagascar has one of the highest rates of malnutrition in the world, affecting 37 percent of children under the age of five in 2004. Malagasy children are prone to malnutrition early in life. By the age of 24 months, more than half of all children are nutritionally at risk, and even more among poorer households. The level of adult malnutrition defined as a lack of calories and/or nutrients and vitamins is also high, with an estimated 65 percent of the population

lacking access to the required standard of 2,300 kilocalories per day (Sharp and Kruse, 2011) being a standard used for malnutrition based upon minimum requirements proposed by the Food and Agriculture Organisation (FAO) and World Health Organisation (WHO). One consequence of malnutrition is reduced agricultural productivity, which again reinforces the cycle of poverty and food insecurity.

Figure 3w presents two non-economic correlates of poverty—life expectancy and under-five mortality—for which Madagascar have shown steady improvement over the past five decades. National figures for child mortality have fallen and life expectancy at birth has steadily increased from 1988 to 2008. Progress on these indicators is attributed to advances in health policies and facilities, as well as vaccinations and access to nutritional supplements which are required for all children. However, drought and famines will have negative impacts upon these indicators for children in the Deep South. Meanwhile climate change with its rainfall variability will present direct risks to health associated with food and livelihood insecurity and is known to also increase pressures to migrate during hunger periods (Warner et al., 2012) from the end of each dry season to the following harvest in the Deep South.

Figure 3w: Well-being indicators for 1960-2010

Source: World Development Indicators (World Bank, 2009); IFPRI, 2013.



Based upon the household survey carried out across the Deep South in 2012 (Table 3d), it is evident that some regions are far more affected than others by many types of stressors. A great number of households are affected by environment and climate impacts, followed by security concerns, due to the increasing incidence of banditry and robbery based upon G4S data (Figures 3g and 3e).

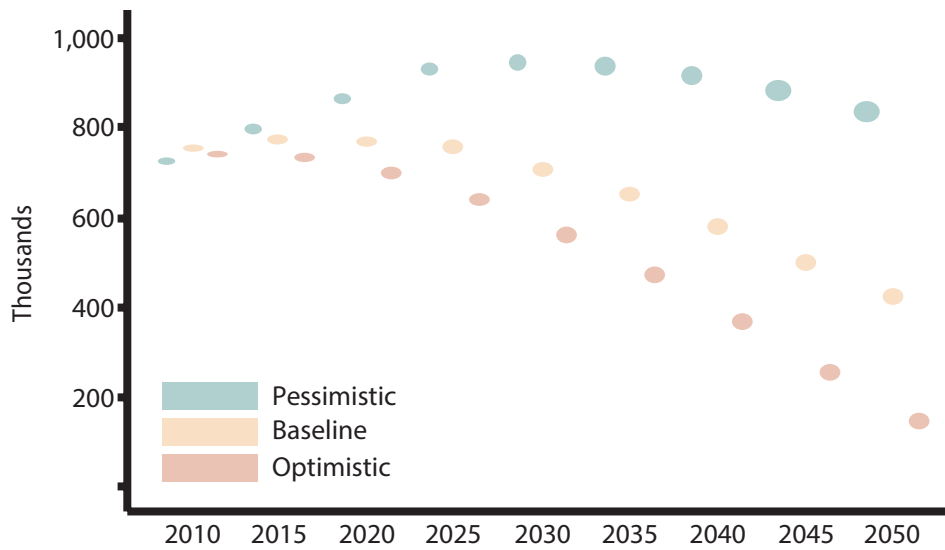
**3.7.3. VULNERABILITIES OF THE POPULATIONS TO CLIMATE CHANGE AND MALNUTRITION**

Table 3d: Proportion of households affected by different stressors (%)

Source: ENSOMD, 2012; INSTAT; World Bank, 2016.

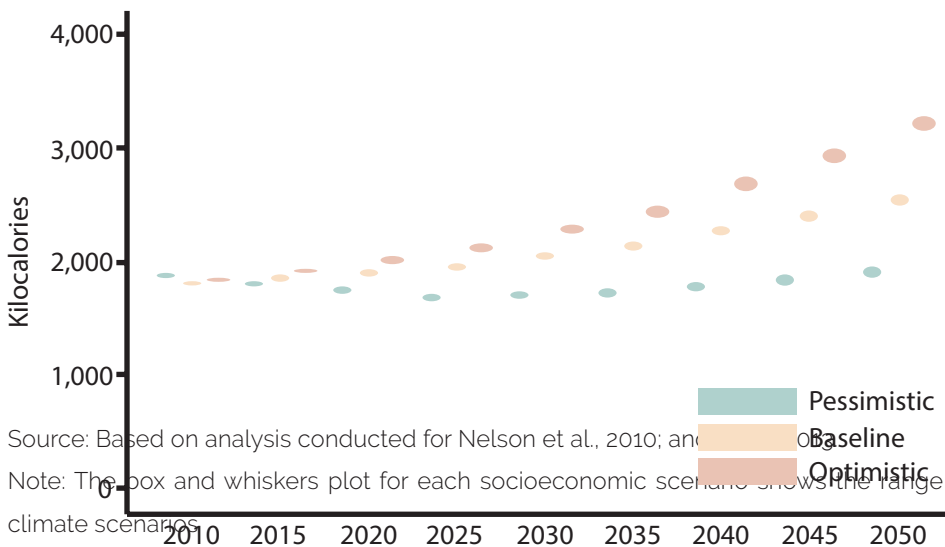
Climate and environmental impacts, including flooding and drought (Table 3e), can lead to famine and malnutrition,

climate scenarios



In the optimistic and baseline scenarios, the population of Madagascar will be less vulnerable by 2050. But the story is not so good for the pessimistic scenario, in which we see the kilocalories per capita barely moving back to 2010 levels by 2050 (Figure 3y). This pessimistic situation is more likely to occur in the Deep South where foreseen climate changes will reduce rainfall and increase temperatures in an already fragile and dry environment.

Figure 3y: Kilocalories per capita in Madagascar for multiple incomes and climate scenarios for period 2010–2050



Source: Based on analysis conducted for Nelson et al., 2010; and  
 Note: The box and whiskers plot for each socioeconomic scenario shows the range of effects from three future climate scenarios

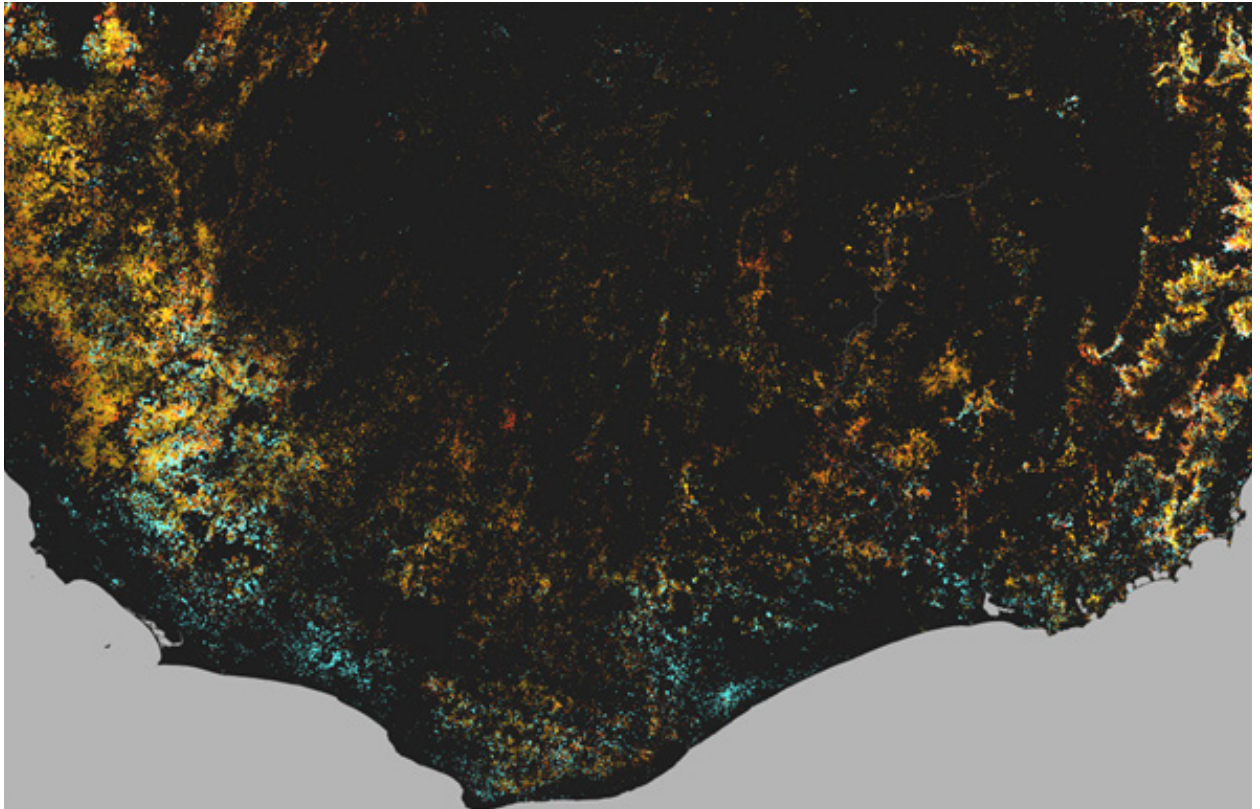
Rice growing constitutes the primary economic activity for the majority of rural farmers across the country (Table 3f), except in the Deep South, Production is inefficient with good rice yields ranging from 1.8 to 2.6 tons per hectare making Madagascar a net importer of their preferred staple food (FINTRAC, 2008).



also appear to be significant and localized losses in parts of comparatively new PAs to the north of Ambovombe and Amboasary Atsimo.

Figure 3ak: Forest loss (light blue areas) in the Deep South from satellite imagery, 2014

Source: University of Maryland, USA, Global Forest Change Project, 2014.



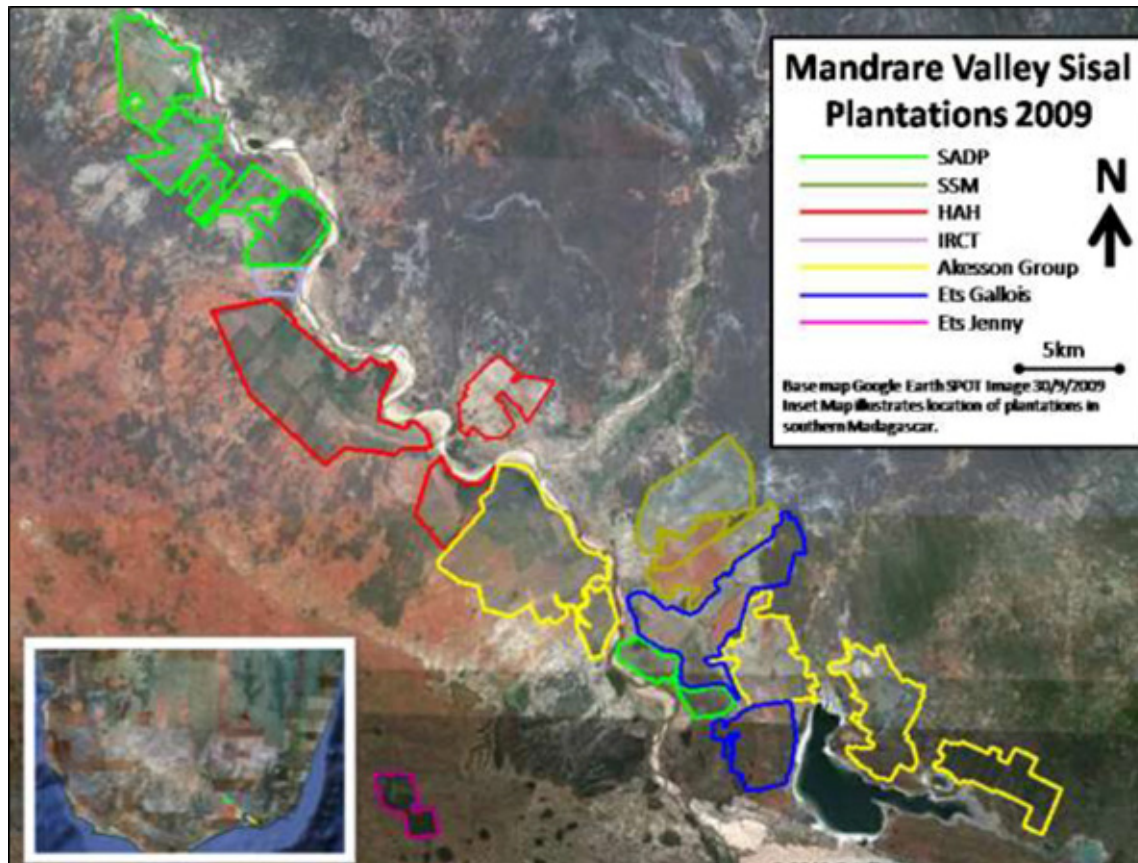
Vast forested areas have been destroyed through the traditional practice by farmers of burning savannah and bush savannah prior to the wet season to encourage new plant growth for their herds and space for the planting of crops. Losses in established PAs during the period 1990–2009, and revived burning since 2014 inside some PAs in the eastern part of the Deep South, show increasing pressure on all forested areas both inside and outside of PAs.

### 3.8.3 SYNTHESIS AND DISCUSSION

The deforestation trend will continue as populations grow, in the absence of alternative incomes or more efficient means of production. Reversing this trend will require strategic, long-term development initiatives aimed at expanding the economic choices of the population.

Land cover in the Deep South is composed of dry vegetation with dry forest and thorn bushes, and open and closed savannah grasslands (Figure 3al). The decline in forest cover, estimated at 200,000 ha per year across the country, is mostly due to conversion to agricultural land through slash-and-burn cultivation practices. Slowing forest loss is

Land conflicts have continued in most villages and some communes around the sisal plantations since their



establishment until the present. Relatively recent clearing of forested areas for additional sisal fields has been particularly unpopular with locals who had used these lands for forest pasture and wood products. This pressure on lands for sisal in this area may have compounded land issues with NGOs attempting to save the biodiversity within PAs near these areas (Ferguson, 2010). It is important to note that the sisal companies have overcome local opposition as they hold significant economic power with the administrations in the region. However, if the lands were left to the local communities and not under the ownership of sisal farmers, there is a significant chance that they would also be cleared by villagers for farming based upon current deforestation scenarios in the Deep South.

### 3.9.3 DELIMITATION OF PROTECTED AREAS

Madagascar has several types of PA which were established before 2000 or designated with full or temporary status after 2000 (Figure 3a0), and categorized according to the guidelines of the International Union for Conservation of Nature (IUCN). In recent years, new Category VI PAs have been established in parts of the Deep South which allow for partial use of PAs through sustainable use of natural resources by local people. These areas are managed by local community associations or VOI under the auspices of NGOs, principally the World-wide Fund for Nature (WWF) with support from GIZ (German Cooperation), and Missouri Botanical Gardens (MBG) in the Deep South. There are also new extensions and development project zones around existing PAs, such as Tsimanampetsotsa PA managed by Madagascar National Parks (MNP) and included in WWF's Mahafaly Plateau landscape programme area. These extensions have brought considerable portions of marine and coastal environments into the PA system; in accordance with the Durban Vision's declaration of 2003 to triple the surface of protected areas from 1.7 million to 6 million ha (Figure 3a0). Following this declaration, a national policy was adopted in 2006 to increase the number of sites and land coverage under PA management. PA site selection was based primarily on biodiversity priorities for nature conservation, the level of threats upon different ecosystems, and sites where nature conservation may

agricultural tools, or technical support. This system is coordinated by senior members of the association, who take full advantage of its benefits but may not necessarily represent the interests of communities. Some stakeholders have suggested that the CSA should become a permanent agricultural extension service, which would provide long-term and appropriate sources of support for farmers in the Deep South and elsewhere. A permanent extension service may be a more strategic and sustainable approach to agricultural development in food insecure areas than the various approaches being implemented by different donors at present.

One donor, UNDP, is supporting efforts by the disaster and risk management agency, BNGRC, to develop a comprehensive resilience and recovery plan for the Deep South. The process involves workshops and consultations aimed at eliciting the views of locals about what kinds of help they need during droughts and famines. Care must be taken, however, to ensure that the process is not captured by village elites and local authorities.

The response to famine in the past has typically been through food aid programs and appeals to the private sector for charitable donations in the Deep South. With appropriate support, the private sector could also play a role in expanding employment and business opportunities in the Deep South. At the same time, care must be taken to distinguish between short-term humanitarian assistance for famine relief and longer-term development programs focused on economic development, employment, improved nutrition and sustainable agriculture. In the past, the mingling of famine relief and development programs has sometimes resulted in the sale of food supplies and nutritional supplements from famine-affected areas.

The remoteness of the south has helped to conserve important elements of the cultures, identities, and social and political power structures of the various peoples who inhabit the area, particularly those living in the harshest and most isolated environments. These factors have made it possible for them to resist Western values and the





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