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Technical Report

Southern Madagascar food insecurity

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2021/2022

Interconnected
Disaster
Risks

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1. Introduction

According to the Global Hunger Index (GHI), Madagascar is one of the top five of 166 countries that registered "alarming" levels of hunger during 2021 (Grebmer and others, 2021). The category "alarming" is assigned to countries ranking between 35 and 49.9 in the 100-point scale of the GHI, which considers four indicators: undernourishment, child wasting, child stunting and child mortality. Madagascar represents a unique case among countries classified as being in an alarming state of hunger whereby armed conflict was not a contributing factor in the crisis, although it is frequently considered the main driver of food insecurity worldwide (Food Security Information Network (FSIN), 2022; Grebmer and others, 2021). Instead, weather extremes and economic shocks have exacerbated the pre-existing poverty conditions in the country, particularly in the south, where, by December 2021, around 1.64 million people were experiencing "acute food insecurity"[1] (Integrated Food Phase Classification (IPC), 2021).

This semi-arid region recorded the lowest rainfall levels in 40 years, resulting in a prolonged drought from 2018 to 2021, with a devastating cumulative effect on harvests and livelihoods. On top of this, frequent sandstorms and pest infestations have triggered severe stress on vegetation and a decline in rice, maize and cassava production. These environmental aspects, combined with a lack of livelihood diversification and ongoing poverty, the presence of cattle raiders and restrictive government decisions, have driven the population of southern Madagascar to acute food insecurity conditions (Figure 1).

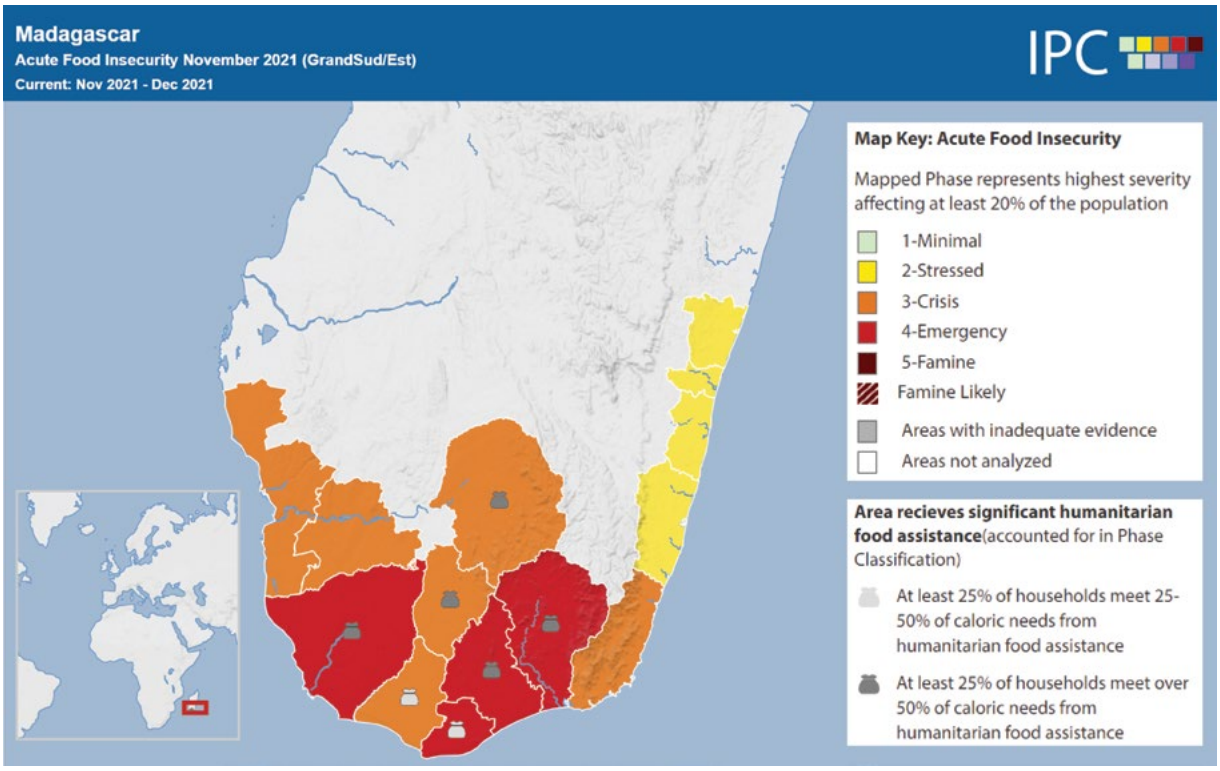


Figure 1: Acute Food Insecurity Situation in Madagascar between November and December 2021. Source: Integrated Food Security Phase Classification (IPC, 2021)

[1] Acute food insecurity refers to "food insecurity found in a specified area at a specific point in time and of a severity that threatens lives or livelihoods, or both, regardless of the causes, context or duration" (FAO.)

According to Food and Agriculture Organization of the United Nations (FAO), "a person is food insecure when they lack regular access to enough safe and nutritious food for normal growth and development and an active and healthy life" (FAO, 2022a). The four conditions to be considered food insecure are described in Box 1. By December 2021, the population of southern Madagascar had slipped into the category of "acute food insecurity." Food "availability" (physical production and/or reserves) had decreased primarily due to stressful environmental conditions. Economic and physical "access" was compromised due to a lack of livelihood diversification and poverty levels. "Utilization" of nutrients was not adequate because the little food reserves people had, did not meet nutrition or energy requirements. Consequently, food "stability" was impacted because there was no continuity in the availability, access and utilization of food resources.

The dimensions of **food insecurity**

Physical **"availability"** of food –
Is the food available?
(includes food production, food reserves, markets and transportation)

Economic and physical **"access"** to food –
Do people have enough physical and economic access to that food?

Food **"utilization"** –
Does the food bring enough energy and nutrition to the body?
(includes feeding practices, food preparation, diversity of the diet and intrahousehold distribution of food)

"Stability" of the other three dimensions over time –
Do people live continuously with access to available and nutritious food?

Box 1: Dimensions of food insecurity. Adapted from FAO (2021c).

2. Impacts

2.1 Health impacts and loss of life

The best known impacts of the complex food insecurity conditions are those linked to human health, specifically to the increased chances of suffering from "malnutrition" or poor nutrition (Huizar and others, 2021). Malnutrition is a broad term that ranges from undernutrition to overnutrition and, in general, refers to a reduction in both quality and quantity of food intake with consequences on body composition and body function, which can lead to a high risk of illness and loss of life (Thompson and others, 2012; Webb and others, 2018; Siddiqui and others, 2020). In southern Madagascar, around 515,000 children under five were considered wasted (i.e. thinner than expected for their age) in 2021 (FSIN, 2022). Between April and June 2021, at least 14,000 children under five were treated for severe acute malnutrition, which is typically the number of total children treated in a year (Bezain, 2021).

Children are eating prickly pears, taken from cacti native to Mexico.
(Image credit: Safidy Andrianantenaina / UNICEF)

The combination of malnutrition with other acute food insecurity circumstances, such as poor water, sanitation and hygiene (WASH) conditions, increases the likelihood of people suffering diseases such as bloody diarrhoea, malaria, polio, plague, measles or COVID-19 (ACAPS, 2022; United Nations International Children's Emergency Fund (UNICEF) and World Food Programme (WFP), 2021; Desrosiers, 2019).

There are no comprehensive official statistics tracking the number of deaths due to starvation. Amnesty International and the Agence France-Presse (AFP) news agency reported at least 340 deaths in relation to the ongoing food insecurity crisis based on anecdotal evidence gathered from southern residents and local authorities. (Amnesty International, 2021; AFP, 2021a).

2.2 Livelihood loss

Around 90 per cent of livelihoods in southern Madagascar depend on agriculture, livestock and fishing activities (ACAPS, 2022). However, the complex environmental and social conditions and the subsequent food insecurity in the region have led to an almost total collapse of such activities. Without alternative livelihood options, people struggle for access to food and income, which exacerbates the ongoing poverty conditions and food crisis in a near-continuous feedback loop (Hänke, 2016). Furthermore, in 2021, government restrictions linked to the COVID-19 pandemic, such as reduced or halted tourism and the closing of non-essential businesses, also decreased livelihood options and increased the prices of food, both furthering the economic shocks and food crisis (ACAPS, 2022; Faliarivola and others, 2022; FSIN, 2022).

2.3 Displacement

Between December 2020 and March 2021, around 3,000 people in southern Madagascar were displaced due to the food crisis (United Nations Office for the Coordination of Humanitarian Affairs (OCHA), 2021b). The length and severity of the ongoing drought conditions and the subsequent food insecurity constraints in southern Madagascar have pushed thousands of people to leave the region and migrate to northern urban districts, which are also struggling due to the economic impacts of the COVID-19 pandemic (Asala and Razafimanantsoa, 2021; ACAPS, 2022). As a consequence of the pandemic, the influx of remittances from family members who previously moved to the north and used to support their families staying in the south has considerably dropped, and the newly displaced people in the northern regions are experiencing limited job opportunities. Due to a lack of alternatives, some end up engaging in "emergency coping strategies," such as illegal forest exploitation, which leads to environmental degradation (Famine Early Warning Systems Network (FEWS NET), 2021)

3. Drivers

3.1 Prolonged drought

Southern Madagascar is an arid to semi-arid region where rainfall is low and erratic, so the occurrence of droughts is not new (Randriamparany and Randrianalijaona, 2022). Historically, local communities have struggled with access to water for domestic and agricultural consumption, even during meteorologically "normal" years with a typical rainy season from November through March (Harrington and others, 2021). However, during the last four years, below average rainfall has severally stressed the vegetation, pushing the region to deal with its worst drought since 1981 (Hansen, 2021).

Since communities in the south heavily rely on rain-fed, small-scale agriculture for survival, the prolonged drought conditions are the primary cause of agricultural losses in the region. In some provinces, those losses have reached 60 per cent of overall harvest during 2021, compromising the "availability" and "access" to nutritious food sources and, consequently, pushing communities into deeper levels of food insecurity (Rice, 2022; Baker, 2021).

3.2 Sandstorms

Locally known as *tiomenas* or red winds, sandstorms in southern Madagascar are a recurrent phenomenon. However, since 2019, increasing deforestation in combination with the prolonged drought conditions has strengthened the intensity, frequency and impact of sandstorms in the region (Razafison, 2021).

Sandstorms generally occur when strong pressure gradients increase wind speed and lift large amounts of dust and sand from bare, dry soils thousands of metres into the sky (Kang and others, 2021; World Meteorological Organization (WMO), 2017). In southern Madagascar, sandstorms are expected occasionally between May and October under normal conditions. However, in the past few years, they have been present all year long, with occurrences up to three or four times per month (Zocherman in Elomaka, 2022). Sandstorms have multiple impacts on the region that exacerbate the food crisis. For example, they contribute to soil erosion as soil is blown away and can dry it out the soil by increasing the evaporation rate (FAO, 2021b). Additionally, the thin layer of dust and sand covers everything in a sort of red blanket, which damages crops (Newey and Townsley, 2021). These fine particles can also affect human health, mainly in relation to respiratory infections (Razafison, 2021). Finally, they affect roads and mobility in the area, jeopardizing both the transportation of people and goods, including food and humanitarian aid for those in need (Ratsifandrihamanana, 2021).

3.3 Pest infestations

Between January and June 2021, more than 48,000 ha of land (nearly 1 per cent of total landmass) in southern Madagascar were infested by the migratory locust (OCHA, 2021c) *(Locusta migratoria capito)* while an outbreak of fall armyworm *(Spodoptera frugiperda)* contributed to the poor production of maize crops (FAO, 2021a). Locust outbreaks have historically been common in southern Madagascar (Lecoq, 2001; Andiatsirevombola and others, 2016). However, the increasing temperatures in the south and the presence of cyclones in the north have created favourable breeding conditions for more frequent locust outbreaks, which, in combination with droughts and sandstorms, severely affected more than 60 per cent of harvests during 2021 (ACAPS, 2022).

Another pest infestation in the region is "Rift Valley fever," primarily affecting domestic animals such as cattle, buffalo, sheep, goats and camels. This disease can be devastating for livestock owners as the treatment is very costly, but if left untreated can also lead to the death of their animals, again worsening food access and income (FAO, 2021a).

On 3 February 2022 in Ambovombe, Androy region, Madagascar, a man pushes a motorcycle through the "Tiomena" on National Road 13. (Image credit: Safidy Andrianantenaina / UNICEF)

3.4 Deforestation

Since its independence from France around 60 years ago, it is estimated that Madagascar has lost at least 90 per cent of its original rainforests due to charcoal-making and slash-and-burn agriculture practices (Newey and Townsley, 2021; WFP, 2021). In southern Madagascar, some studies provide evidence of at least 45 per cent of forest losses in the past 40 years due to increasing savannization and forest fragmentation (Brinkmann and others, 2014).

For many local communities, rain-fed subsistence-oriented agriculture implies that when the dry spells strike, farmers need to find other sources of income (Ralaingita and others, 2022). Due to a lack of livelihood diversification, the services provided by forests, such as the provisioning of fuelwood, medicinal plants, animal fodder and wood for charcoal production, become a viable alternative to have access to food and income during drought periods (Brinkmann and others, 2014). However, in the long term, such practices are not sustainable and lead to further environmental degradation, which exacerbates soil erosion favouring the drought cycle (Desbureaux and Damania, 2018) and increases the occurrence of sandstorms (Razafison, 2021; Langenbrunner, 2021).

3.5 Poverty

Around 91 per cent of the population in southern Madagascar lives below the poverty line, implying that at least 3.5 million people in the country earn less than $1.90 per day (Healy, 2018; Amnesty International, 2021). Under such dire conditions, combined with prolonged drought, increasing sandstorms and pest infestations, the “access” to food becomes a challenge pushing the population into a vicious cycle of poverty, hunger and malnutrition (Ralaingita and others, 2022; Hänke, 2016). Malnutrition produces conditions of poverty by reducing the economic potential of the population, and likewise, poverty reinforces malnutrition by increasing the risk of food insecurity (Siddiqui and others, 2020).

The socioeconomic impacts related to the COVID-19 pandemic have also worsened the extreme inequality in the region, restricting access to markets, affecting the supply chain and thus driving up food prices (e.g. between November and December 2021 the price of staples such as rice and maize increased by up to 12 and 37 per cent respectively, compared to the same period in 2020), and limiting livelihood opportunities (e.g. restrictions on the tourist sector), further impacting even more the high rates of poverty (United States Agency for International Development (USAID), 2021; FSIN, 2022; Brown, 2021).

4. Root causes

4.1 Human-induced greenhouse gas emissions

By 2020, Madagascar was only responsible for 0.01 per cent of the annual share of global CO2 emissions; however, it is one of the ten countries most vulnerable to the adverse impacts of climate-related hazards (Ritchie and others, 2020). The Intergovernmental Panel on Climate Change (IPCC) has reported an "observed" increase in aridity and a "projected" increase with medium confidence in both meteorological and agricultural/ecological droughts as temperatures continue to rise in the country (IPCC, 2022; IPCC, 2021). Furthermore, there is evidence that changes in ocean temperatures have been shifting rainfall towards South Africa rather than southern Madagascar, which has helped deepen the drought (Newey and Townsley, 2021). Additionally, such lack of rainfall also decreases the biomass exchange and, in combination with deforestation, impacts the carbon storage, exacerbating climate change patterns (Desbureaux and Damania, 2018). Overall, while climate change contributes to increased aridity and more frequent droughts in Madagascar, social aspects such as poverty likely played a more significant role in creating the current food crisis (Harrington and et al., 2021).

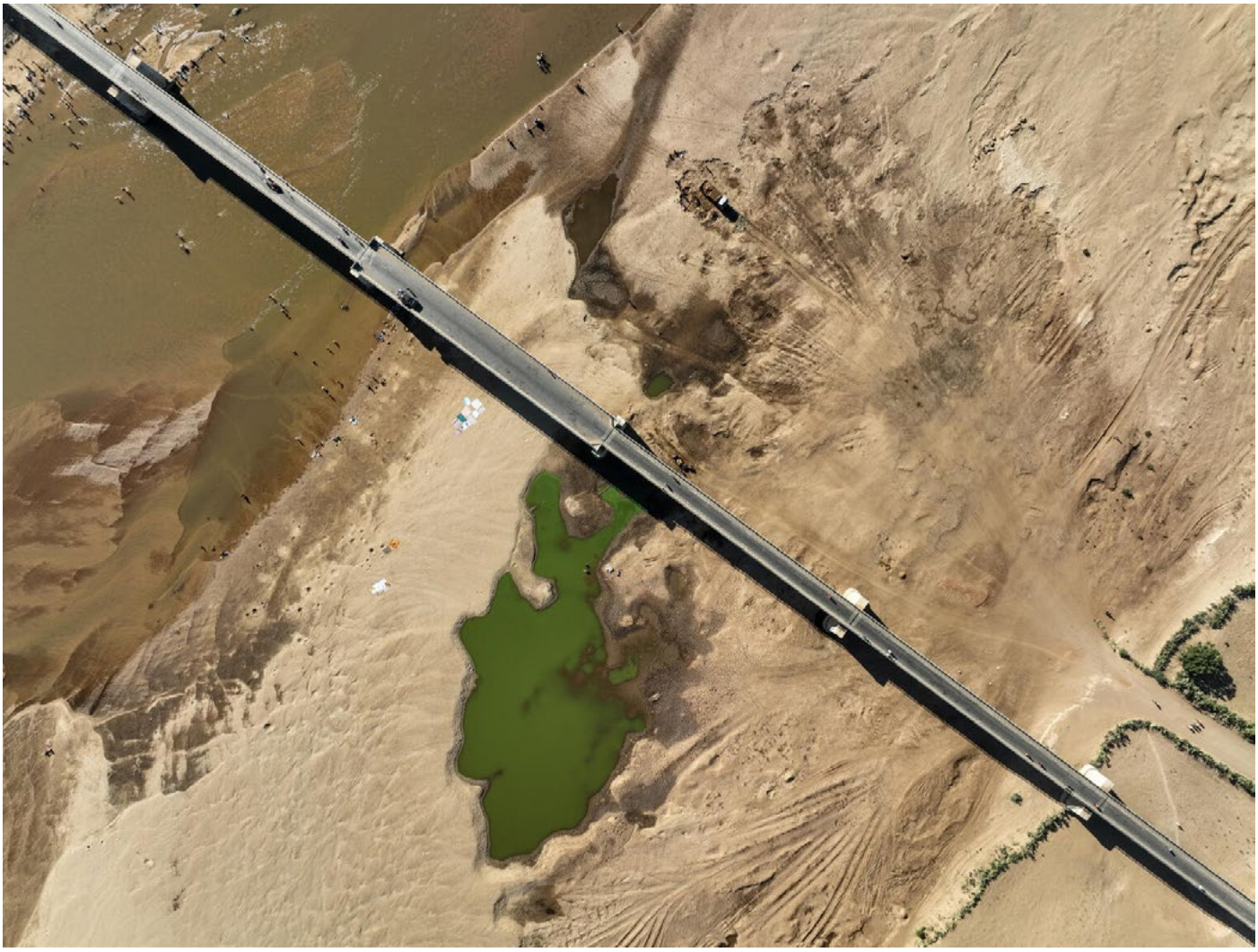
4.2 Undervaluing environmental costs

Although Madagascar covers less than 1 per cent of Earth's surface, it hosts more than 5 per cent of all known plants and animals on Earth, most of them endemic to the island (Desbureaux and Damania, 2018; Sagar and others, 2021). For example, the dry forests from south-western Madagascar contain 154 reptile species, 101 mammal species, 73 bird species, 34 amphibian species and 198 plant species (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), 2018). However, deforestation in the country has reached high levels (around 45 per cent in the last 40 years, see section 3.4). Moreover, though management and conservation of remaining natural resources have been highlighted as urgent needs by conservation groups, there is little government money to support such activities (Tollefson, 2019; Sagar and others, 2021).

This is particularly critical in the south, where most of the population lives in rural areas and depends heavily on the use of natural resources as the primary source of food and income (Randrianarison and others, 2020). When hunger strikes, rural communities have to find other ways to survive that may not be so sustainable, like expanding the practice of slash and burn and overharvesting trees for charcoal and cooking wood, increasing the deforestation rate in the region (Ralaingita and others, 2022). Such misuse of available natural resources without considering more environmentally-oriented livelihood practices can also be connected to the legacy of colonialism and the historically ineffective governance that has neglected the needs of both local communities and nature (USAID, 2022; Rice, 2022).

4.3 Legacy of colonialism

Madagascar had mixed experiences with colonialism, as many foreign powers attempted to create trading posts and conquer the island but were met with violent resistance (Cole and Middleton, 2001). Eventually, the island was annexed by France in 1896 after removing the Merina monarchy from power, and the colonial occupation was defined by resource appropriation and exclusion of indigenous Malagasy people. During the first half of the occupation, colonial logging forces drove extensive deforestation as precious hardwoods were exported for profit. At the same time, other trees were felled for local infrastructure projects such as railroads, which were responsible for cutting down as many as 4 million ha of forest (Randrup, 2010). Extensive agricultural concessions for colonists contributed to further deforestation, as cash crop plantations of sugar, coffee and vanilla became increasingly widespread. Due to French taxes forcing many Malagasy people to work on these cash crop plantations, the increasingly limited land and labour created rice shortages, a staple of the local diet (Randrup, 2010).



On 3 February 2022 a bridge on the Mandrare river before Cyclone Batsirai, Amboasary Atsimo in the Anosy region, Madagascar. (Image credit: Safidy Andrianantenaina / UNICEF)

In southern Madagascar, people who resisted the occupation often hid in spiny vegetation, which represented an obstacle for the French, who conducted systematic deforestation as a means of control (Pearson, 1997; Randrup, 2010). The prickly pear cactus was a symbol of impenetrability for the locals and was part of basic subsistence, providing supplemental food and water for people and cattle, especially during years of drought (Cole and Middleton, 2001; Middleton, 1999). It is believed that the French introduced a cactus pest – a cochineal[2] insect – to kill the spiny cactus in southern Madagascar. This was accomplished within a few years later, leaving the locals unprepared to deal with the subsequent food crises (Kaufmann, 2001). For example, according to Cole and Middleton (2001), reports from the 1930/31 famine show how the impacts were more concerning than ever, with deaths of both population and livestock.

This case of the spiny cactus and how a colonial decision made almost 100 years ago increased the vulnerability of the people in southern Madagascar is just one example of how colonialism processes have contributed to the ongoing food crisis. Furthermore, it also shows the interconnectedness of this root cause with others related to environmental degradation or governance process, for example.

4.4 Insufficient risk governance

During the last four years, the prolonged drought in southern Madagascar and resultant food crisis have evidenced the historical struggles of the national and local governments to respond to and manage such extremes (Healy, 2018; Weiskopf and others, 2021). Limited finances and political uncertainty are frequently appointed as the main culprits. Madagascar ranks among the top five countries with the lowest GDP in the world (World Bank, 2022b), and the country is still dealing with the consequences of the 2009 *coup d'état*, after which many government services collapsed, poverty increased, the infrastructure weakened and rural banditry spiralled (e.g. cattle raiders like the *malaso* or the *dahalos*), especially in the south (Hänke, 2016).

Although the government has adopted different risk management policies to deal with the situation, such as the National Adaptation Program of Action since 2006, lack of implementation is a significant issue (Amnesty International, 2021). One example is the deficient road network in the south, which has seen little investment since colonial times (Healy, 2018). This translates to slow and costly access to markets, reduced mobility for those who work and study somewhere else, and delays in delivering humanitarian aid to the more vulnerable people facing acute food insecurity in the region.

Finally, the handling of the COVID-19 pandemic was another example of insufficient risk governance. Although trying to contain the spread of the virus, the management of the pandemic worsened food insecurity conditions. The movement restrictions introduced by the government affected thousands of livelihoods in the south, with consequences on prices of essential foods, which further exacerbated the ongoing hunger crisis. The government was highly criticised as containment measures put even more pressure on other vulnerable sectors, such as health, education, manufacturing and tourism (ACAPS, 2022). This led to social protests between March and April 2021, revealing discontent with the government across the country (AFP, 2021b).

[2] A scale insect / A primarily sessile parasite native to tropical and subtropical South America through North America that lives on cacti in the genus opuntia, feeding on plant moisture and nutrients https://www.mindat.org/taxon-2090105.html

4.5 Inequality of development and livelihood opportunities

Since colonial times, the historical opposition of the communities in southern Madagascar to be conquered seems to have influenced how they are seen by the rest of the country. For example during the French occupation, they were described as being “less civilized” and “untrusty,” which is believed to still play a role in the current marginalization of this part of the country (Healy, 2018).

The regional disparities are quite evident; in education, for example, while approximately 44 per cent of the country’s population has had some schooling, the number is only 20 per cent in southern Madagascar. The literacy rate for those older than 15 years in the country is 72 per cent, whereas in southern Madagascar is only 44 per cent (Healy, 2018; Amnesty International, 2021). Such lack of education in the south translates to less development and limited livelihood opportunities, besides those related to agriculture, which, as described before, are already under pressure due to the ongoing food crisis.

In terms of social protection, for Madagascar, the share of GDP is only 0.3 per cent compared to an average of 0.75 in other countries like Mali, Malawi and Niger (Rawlings, 2020). Although there are plans in the south to reduce inequality in terms of access to essential social services, southern Madagascar still has the poorest access to health services in the country (Amnesty International, 2021).

Another important aspect of inequality in the region is gender-based issues, which go from challenges facing female-headed households in accessing employment and opportunities (Fitawek and others, 2020) to violation of sexual and reproductive health rights of women and girls (Amnesty International, 2021). A survey covering 13 communes in southern Madagascar reported an increase in gender-based violence from 25 to 50 per cent by the end of 2020 (OCHA, 2021a). These issues continually affect women’s access to water and food, contributing to the worsening of the crisis.

5. Big picture

During 2021, levels of hunger increased around the world, resulting in almost 40 million new food-insecure people in need of urgent assistance compared to the levels recorded the previous year. This means that by December 2021, around 193 million people across 53 countries/territories were classified as acutely food insecure (FSIN, 2022). Southern Madagascar food insecurity is an example of how multiple, complex environmental and social factors can combine to trigger a profound crisis in a territory, where vulnerable groups, such as children under five, tend to be particularly affected. Environmental degradation, together with socioeconomic and political dynamics are leaving vulnerable people even more exposed to food crises with few livelihood options or safety nets to cope with disasters. Furthermore, the situation is exacerbated by climate change, which magnifies the impacts on the ground. Therefore, integrated solutions are needed to ensure a holistic approach that facilitates the enhancement of adaptive capacities of at-risk groups in order to fight back hunger.

On 4 March 2022 in Bevoalavo village, Madagascar, Sanasoanandrasana, 25, carries her 2-year-old son Razafimandimby while he eats a Ready-to-use therapeutic food (RUTF).(Image credit: Abela Ralaivita/UNICEF)

6. Solutions

6.1 Let nature work

For years, native forests in southern Madagascar have provided essential ecosystem services to local communities, particularly during drought years (see section 3.4). However, increasing pressure from agricultural expansion and erosion have led to forest degradation. Ecosystem restoration allows for the regaining of healthy forests so that communities can benefit from their services and better deal with future food crises (World Rainforest Movement (WRM), 2003). One crucial aspect to ensure this includes working closely with local communities to plant suitable trees (e.g. non-invasive species) of fast-growing species for their use (e.g. fodder needs) while ensuring the protection of remaining native forests (Donati and others, 2021).

Examples of *Let nature work* already in place in southern Madagascar include projects related to forest and landscape restoration (FLR), seeking to go beyond planting trees to regaining ecological functionality of the entire landscape and at the same time ensuring human well-being through the generation of new jobs, income, alternative food provisioning (facilitating "access" to food, see Box 1) and carbon sequestration (InfoFLR, 2022). The project "Biodiversity Conservation, Restoration and Integrated Sustainable Development of Mangoky sub-watersheds" led by FAO plans a wide-scale implementation of FLR to "improve ecosystems services, sustainable intensification and biodiversity conservation" and expects to positively impact at least 31000 people (see more at FAO, 2022b).

6.2 Innovate

As part of the solutions oriented to increase resilience to drought and food crisis in southern Madagascar, "climate-smart agriculture" seems to be one of the best examples of combining sustainable innovations with traditional and local knowledge. Overall, this landscape approach seeks to increase productivity, enhance resilience and reduce emissions (World Bank, 2018). It implies planting what works better based on the properties of the soil and the availability or lack of water, accompanied by nutrition-sensitive considerations for locals. This means carefully design agro-practices, bearing in mind which type of crop is more drought-resistant and could bring enough energy and nutrition to the body. Under these precepts, food "availability", "access" and proper "utilization" (see Box 1) could be accomplished in a way that helps local communities in the south in their fight against hunger.

For the context of southern Madagascar, some examples of drought-tolerant and highly nutritious crops are cassava, sweet potatoes, pigeon peas (see 2021/22 IDR report, section 4.4.2; van der Perre, 2022), millet and sorghum. The latter, originally domesticated in Africa and with a native species linked to Madagascar *(Sorghum arundinaceum)* (Ananda and others, 2020), has been suggested as a better alternative to maize, the estimated crop losses of which due to the drought reached 70 per cent during 2021 (Zocherman in Elomaka, 2022). Besides being less water demanding, sorghum is an important source of nutrients, calories and minerals and can be grounded into flour and used for both human and livestock consumption (Adventist Development and Relief Agency International (ADRA), 2021).

The vegetable garden of the women's association "DEFI" in Madagascar, Androy region, Ehavo village during the lean season 2022 and after the passage of Cyclone Batsirai. (Image credit: Safidy Andrianantenaina / UNICEF)

6.3 Plan for risks

Inclusive development and adaptation planning seeks to tackle down social inequalities affecting certain population groups that become even more evident when a disaster takes place (Steinbach and Blanchard, 2020). Research has shown how the impact of climate-related disasters such as the prolonged drought in southern Madagascar do not affect men and women equally (see section 4.5). For example, women and girls in the region often eat smaller or less nutritive portions for the benefit of the male family members (UNICEF, 2022).

To change this and to ensure progress towards a world with zero hunger, the Malagasy government have been designing different integrated strategies like the "National Risk and Disaster Management Strategy 2016-2030," which involves eliminating gender-based violence a principle (Government of Madagascar, 2016). Under this framework, for southern Madagascar, the FAGNAVOTSE 2019-2023 programme, a joint integrated and inclusive social protection initiative under the climate risk insurance umbrella led by the Malagasy Government with the support of International Labour Organization (ILO), United Nations Population Fund (UNFPA), UNICEF and (WFP), has been focusing on five areas of intervention, where the fight against gender-based violence seeks to create conditions that facilitate the empowerment of women and girls so they can make decisions about food intake and better quality of life for their families (WFP, 2022b; UNICEF, 2020). This type of solution is also an example of *Work together* as it addresses the need for a holistic approach and collaborative planning supporting inclusive development.

6.4 Secure livelihoods

Enabling social protection requires a set of basic social security guarantees, such as access to essential health care (including maternity care), security for children (including access to nutrition), income security for persons of working age that are facing a particular challenge (e.g. sickness, disability, unemployment, maternity) and income security for elders (ILO, 2021). Giving the ongoing food insecurity conditions in southern Madagascar and how they affect all social groups, finding integrated solutions that ensure each of these guarantees is a priority. Although national investment in social protection is too low (see section 4.5), there are several initiatives that attempt to integrate this approach at their heart. For example, the R4-Rural Resilience Initiative in southern Madagascar has helped thousands of vulnerable households through a combination of four risk management strategies: risk reduction (asset creation or improved agricultural practices), risk transfer (insurance), prudent risk taking (e.g. livelihood diversification) and risk reserves (savings) (WFP, 2022c).

The aforementioned FAGNAVOTSE 2019-2023 programme, which aims to increase financial inclusion and support value chain development, linked to market access activities, with participants receiving "post-harvest loss trainings." As complements, risk reduction and climate adaptation activities have been introduced in the projects in order to increase farmers' adaptative capacity, including by investing in agroecology techniques and improving access to short-cycled crops to lower food insecurity (WFP, 2022a). Other examples relevant for the context of southern Madagascar are the so-called child-sensitive social protection initiatives led by UNICEF that seek to provide safety nets especially for malnourished children, where the risk of death is 11 times higher (Freeland and others, 2021). However, it is important to highlight that for all these projects, a series of enabling conditions needs to be considered in the context of southern Madagascar. For example, in order for farmers to get access to markets and aid, roads and transportation networks need to be adequate, affordable and safe (see 2021/22 IDR report, section 4.4.3).

6.5 Strengthen governance

During the past few years, the Malagasy government has prioritized climate change adaptation and development in the southern region in order to respond to the ongoing food crisis (World Bank, 2021) . Part of the process has been strengthening the government itself through a) sustainable planning that includes national disaster risk management strategies (see section 5.3), b) longer term developments for the local governments in the south, and c) investments related to critical infrastructure, such as a pipeline system to transport water and a road network to support displacement and livelihood diversification in the region (Newey and Townsley, 2021).

An example of such types of measure is the "MIONJO" project, funded by the World Bank and implemented by the Ministry of the Interior and Decentralization of Madagascar (see World Bank, 2022a). Its main objective is to improve access to basic infrastructure and livelihood opportunities, strengthening the local government to provide rapid and effective responses to the ongoing food crisis. The project also seeks "to build back better greening interventions" that help in the rehabilitation of the food production (for example, through irrigated production of higher value, nutrient-rich foods), livelihoods (for example, through climate-smart innovations) and health of ecosystems (for example, through reforestation and installation of windbreaks) (World Bank, 2021).

6.6 Conclusion

There are other possible actions to address the food insecurity in Madagascar that are relevant in different contexts, such as those that include immediate assistance, like school meal programs for urgent nutrition interventions or community- based training to enhance traditional knowledge of certain types of crops. However, the five solutions described above are intended to address the complexity of the root causes and drivers, thus reducing adverse impacts linked to the food insecurity crisis in southern Madagascar by targeting different environmental, social, economic and governmental aspects. In this sense, they are designed to work together as a solution package in order to take advantage of the several co-benefits and synergies they could bring while minimizing trade-offs resulting in unwanted outcomes (see 2021/22 IDR report, section 4.4.1). In this sense, none of them would be sufficient if implemented in isolation, but, as part of an integrated strategy that seeks to address multiple challenges, they could help to manage the ongoing food crisis in the region, and build resilience to reduce the risk of similar events in the future.

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Cover Image Credit: Safidy Andrianantenaina / UNICEF
The large trees of Ambovombe grow following the direction of the Tioka wind which blows all year round. A little boy took advantage of the tree trunk to shelter himself from the attacks of the sandy wind.

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