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Project Information Document (PID)

Appraisal Stage | Date Prepared/Updated: 06-Dec-2022 | Report No: PIDA35198

**BASIC INFORMATION****A. Basic Project Data**

Country Madagascar	Project ID P175269	Project Name Rural Livelihoods Productivity and Resilience Project	Parent Project ID (if any)
Region EASTERN AND SOUTHERN AFRICA	Estimated Appraisal Date 19-Dec-2022	Estimated Board Date 22-Mar-2023	Practice Area (Lead) Agriculture and Food
Financing Instrument Investment Project Financing	Borrower(s) Ministry of Finance	Implementing Agency Ministry of Agriculture, Livestock and Fisheries	

Proposed Development Objective(s)

To increase productivity and strengthen resilience of rural livelihoods in Targeted Areas in Madagascar.

Components

Component 1: Promoting community-led restoration and management of watersheds in target areas
Component 2: Sustainable intensification of irrigation infrastructure and services
Component 3: Strengthening livelihood resilience and value chains
Component 4: Project Management and Monitoring and Evaluation
Component 5: Contingency Emergency Response Component

PROJECT FINANCING DATA (US\$, Millions)**SUMMARY**

Total Project Cost	225.00
Total Financing	225.00
of which IBRD/IDA	200.00
Financing Gap	0.00

DETAILS**World Bank Group Financing**

International Development Association (IDA)	200.00
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IDA Credit	200.00
Non-World Bank Group Financing	
Other Sources	25.00
Bilateral Agencies (unidentified)	25.00
Environmental and Social Risk Classification	
Substantial	
Decision	
The review did authorize the team to appraise and negotiate	

B. Introduction and Context

Country Context

1. Development prospects in Madagascar remain fundamentally constrained by a lack of infrastructure and human capital, slow structural transformation, poor governance and acute exposure to shocks. Madagascar is one of only six countries in the world where real income per capita has been on a declining trend over the last 60 years, and the only country within that group that did not face prolonged civil wars or armed conflicts. Even during the 2013-19 upturn, which was supported by a return to political stability, the reopening of key export markets, and the reengagement of donors, real GDP growth only averaged about 3.5 percent, which barely surpassed population growth. Sectors where Madagascar is considered to have strong comparative advantage such as textiles, agribusiness and tourism contributed marginally to the recovery, while agriculture, which is by far the largest source of employment, saw stagnant output and declining productivity.

2. Amid growth stalled, poverty in Madagascar remains pervasive and deeply entrenched. Among the poorest countries in the world, Madagascar is poorer today than it was at independence. The average Malagasy is more than 40 percent poorer in 2020 than in 1961. Due to downside pressures from the global pandemic, climate shocks and the fallout from the conflict in Ukraine, the poverty rate reached a new record high of 81 percent of the population (estimated at US\$1.90 per day in 2011 PPP), up from 77.6 percent in 2012 and 68 percent in 2001. Among the highest in the world, this equates to more than 4 in 5 people living in poverty. By comparison, this ratio far exceeds the global average (10%) and the regional average (40.4%). At this pace, Madagascar remains well off track in achieving Sustainable Development Goal (SDG) 1 and all but a handful of the other goals by 2030.

3. The poorest among the population of 28.4 million are concentrated in rural areas, where four in five Malagasy reside. While urban poverty has decreased over time, poverty in rural Madagascar has remained persistently high. Between 2005 and 2012, the urban poverty rate fell from 41 percent to 30 percent. Over the same period, the rural poverty rate increased from 77 percent to 80 percent. Today, four in five rural Malagasy live on less than USD 2.10 per day. Not surprisingly, social indicators associated with poverty—infant mortality, life expectancy, illiteracy,



malnutrition and access to services (e.g., clean water, improved sanitation services, electricity)—are disproportionately lower in rural areas.

4. Madagascar’s Human Capital Index (HCI) ranks near the bottom globally. Slightly lower than the regional average, Madagascar’s HCI (0.39) is the same as it was in 2010. This effectively means that a child born today in Madagascar in 2020 will be only 39 percent¹ as productive as an adult than if he or she enjoyed complete education and full health. Among key drivers, food systems that are increasingly fragile and fundamentally failing to provide not only sufficient calories to sustain the island nation’s growing population, but also nutritious and healthy diets. Imports of food staples such as rice and edible oils have grown substantially in years amid declining per capita production. Consequently, Madagascar has the world’s fourth highest rate of chronic malnutrition, with almost one child in two under five years of age suffering from stunting. Fertility has declined from 5.5 births per women in 2000 to 4.1 in 2019, however remains very high and unevenly distributed across the territory and income groups, driven by high child marriage (36 percent) and adolescent pregnancies (40 percent). Living conditions remain difficult, with a low rate of access to electricity (13 percent) in particular, especially among rural communities.

5. Among 22 of 146 countries in which wealth per capita decreased between 1995 and 2018, Madagascar is beset by low productivity of the country’s natural resource base and relatively high population growth. Total wealth, defined as the sum of natural, produced, and human capital, and net foreign assets, increased by 91 percent between 1995 and 2018, driven by a rapid increase in human capital, the largest asset category in 2018². However, because population grew by 94 percent during the same period, total wealth per capita, the measure of sustainability of growth, decreased by two percent. Low productivity of the country’s natural asset base in large part drove the decline in total wealth per capita. Produced capital per capita remained mostly constant and human capital per capita increased over the period between 1995 and 2018, and therefore the decrease in total wealth per capita was driven by a decline in natural capital wealth per capita. While rich in natural assets—including the longest coastline in Africa, substantial fisheries, unique biodiversity and forests, abundant agricultural land and micro-climates suitable for a range of high-value crops, and appreciable surface and ground water resources—Madagascar has been unable to leverage this wealth for sustained economic gain. Moreover, demographic and other pressures have accelerated exploitation and rapid depletion of the country’s natural resource base on which the rural poor depends for livelihoods.

6. Still, prior to the COVID-19 pandemic, Madagascar was on a modest growth trajectory. The economic recovery that began in 2013 gradually strengthened until 2019, supported by the return to political stability which helped to restore investor confidence, reopen access to the main export markets, restore flow of concessional finance and encourage structural reforms. Despite positive momentum, growth peaked at a still modest level of 4.4 percent in 2019 and averaged 3.5 percent over the period of 2013-19, barely exceeding population growth and far weaker than the investment-led recovery of the mid-2000s. Lower investment rates were a key factor holding back activity and job creation and reflected an unfavorable and unpredictable business environment, deteriorating connectivity infrastructures, barriers to competition and constrained access to energy, land, and finance.

¹ Between 2012 and 2017, Madagascar’s HCI decreased from 0.39 to 0.37 before increasing back to 0.39 in 2020, measured before the onset of the COVID-19 pandemic.

² World Bank 2022. Madagascar Country Environmental Analysis.



7. The pandemic hastened the deepest recession since 2002 and reversed nearly a decade of steady, albeit modest gains in poverty reduction. The initial impact of the COVID-19 crisis was severe, with the collapse of export earnings and private investment leading to a contraction of GDP by 7.2 percent in 2020, the strongest in the last two decades. A second wave of the pandemic in 2021 and continued border closures have delayed recovery, with growth estimated by the World Bank at 1.8 percent in 2021. Overall, per capita income fell by about 10 percent between 2019 and 2021, representing the most intense economic shock since the crises of 1991 and 2002. Additionally, several consecutive seasons of below average rainfall in recent years has fueled a severe food crisis in the Grand South and Southeast regions, with more than one-third (roughly 2.06 million, or 39 percent) of people across the region's 16 hardest-hit districts facing acute food insecurity through March 2023, according to the latest IPC update (August 2022).

8. The conflict in Ukraine has placed further downside pressures on Madagascar's post-pandemic economic recovery. The crisis in Ukraine is expected to have a noticeable impact, particularly through slowing demand from key trading partners (especially the European Union, which absorbs 32 percent of the country's exports), and rising international oil prices, which are expected to lead to a deteriorating trade balance and growing pressure on public finances. Higher international oil prices are also expected to fuel a widening trade deficit (refined petroleum products account for 5.1 percent of GDP). The impact of higher fertilizer and food prices, particularly those for wheat, corn and edible oil, is expected to be more modest, given their relatively low share in overall imports and household spending. Against this backdrop, growth is projected to slow down to 2.6 percent in 2022 and the poverty rate to remain close to 81 percent, nearly twice the average of Sub-Saharan African countries.

9. Madagascar is highly vulnerable to climate shocks. Due its location, topography, and socioeconomic conditions, Madagascar is highly exposed to extreme weather events, especially cyclones, flooding, and drought. The island country's extensive coastline and location in the Indian Ocean make its especially prone to cyclones. The 2019 World Risk Report³ ranked Madagascar at 17 out of 171 countries in terms of exposure to natural disasters. Growing fragility of ecosystems⁴ and depletion of the country's natural resource base amplifies the country's vulnerability. A catastrophe risk modeling study estimated that Madagascar faces average annual losses of US\$100 million for cyclone and flood combined hazards, and that every year, there is a 10 percent probability that damages will exceed US\$240 million and a 5 percent probability that they will exceed US\$600 million⁵. These risks and their impacts have a high economic and fiscal impact, inhibiting the economy's ability to grow and improve social conditions.

10. Climate change is expected to increase the frequency and intensity of hydrometeorological disasters with adverse effects on key sectors of the Malagasy economy, especially agriculture. Drought conditions are recurrent in southern regions while the north and northeast are often affected by flooding and rainfall variability, trends which are predicted to increase in number and severity under climate change. Rainfall patterns in some regions are expected to intensify, leading to increased flooding and erosion, while in other parts of the country, especially the south, incidences of drought will become more frequent. While it is conceivable that some crops may respond positively to elevated CO2 concentrations, the increasing variability of rainfall, more intense cyclones, and increasing temperatures are expected to reduce agricultural production overall⁶, all with severe implications on the sector's growth prospects and the

³ The Global Climate Risk Index (CRI) developed by Germanwatch analyses quantified impacts of extreme weather events both in terms of fatalities as well as economic losses that occurred. The countries ranking highest are the ones most impacted.

⁴ An estimated ninety percent of rainforests have been lost to logging, charcoal-making and slash-and-burn agriculture.

⁵ World Bank. 2016. Disaster Risk Profile: Madagascar.

⁶ Weiskopf, S. R., J. A. Cushing, T. Morelli, and B. J. E. Myers. 2021. Climate change risks and adaptation options for Madagascar. *Ecology and*



country's food and nutrition security. They also disproportionately affect the rural poor who rely heavily on climate-dependent agriculture for their livelihoods.

11. Women, youth and people with disabilities are especially vulnerable amid high levels of gender inequality. Madagascar's population is estimated at 28.43 million (2021), of which more than half are women and 60 percent are under the age of 25. According to the World Bank, women earn an average of 34 percent less than men and female-headed households have a higher incidence of extreme poverty than male-led ones. The population 15 years and younger accounts for more than half of residents living in extreme poverty⁷. Natural disasters, including pandemics, have a disproportionate impact on women, young persons, and persons with disabilities, especially in rural areas due their heavy reliance on agricultural-related sources of income. Cultural norms and beliefs, prevailing gender roles and unequal gender power relations in Madagascar influence access to the health, food and nutrition, education, property, infrastructure, basic services (e.g., water, agriculture extension) and employment, often placing women and youth at an economic and social disadvantage. Women have limited participation in decision making related to issues affecting their wellbeing and that of their families, communities and surrounding environment. Women in Madagascar are also victims of gender-based violence, which is widespread and broadly accepted as part of a woman's life.

Society 26(4):36.

⁷ Sulla, V., and D'Hoore, A. (2014). Face of Poverty in Madagascar : Poverty, Gender, and Inequality Assessment. Available online at: <http://documents.worldbank.org/curated/en/2014/03/19548476/face-poverty-madagascar-poverty-genderinequality-assessment>



Sectoral and Institutional Context

12. Farming, fishing and forestry remain the backbone of Madagascar's economy. Roughly four in five people, mostly subsistence farmers, rely on agriculture for their livelihoods. Roughly the same ratio lives below the poverty line of US\$1.90 per day. Seventy-eight percent of Malagasy households practice agriculture, with 71 percent practicing livestock keeping and 18 percent fishery. Majority of the households at 68 percent practice mixed farming; the most common, mixed crop-livestock systems (61 percent), followed by crop-livestock-fish (10 percent) and mixed crop-fish systems (1.5 percent). The majority are subsistence farmers, with only 17 percent focused on cash cropping and 27 percent on industrial agriculture. At the same time, smallholder farmers are also responsible for the majority of commercial agricultural produce in the country. They sell on average 25 percent of their production and produce 45-90 percent of commercialized production for crops such as vegetables, peanuts, sugar cane, vanilla, coffee, fruits and spices, the latter tree crops among the country's top agricultural exports. Rice dominates crop production, but not enough is produced to satisfy domestic consumption needs.

13. Despite the sector's massive socio-economic footprint, sustained growth has been elusive. For a sector that accounts for 70 percent of total employment, its share of total exports (37 percent) and GDP (29 percent) is markedly limited. Agriculture labor productivity agricultural labor productivity is very low—significantly lower (US\$369.6) than the average for Sub-Saharan Africa (US\$1,526) in 2019—and has fallen by 31 percent since 1991.⁸ Despite favorable land and water resources and strong growth potential, agriculture has failed to step up—as it has elsewhere in Africa, Asia and across the developing world—as a driver of structural economic transformation and growth.⁹ Low productivity, acute exposure to shocks, poor post-harvest techniques, limited storage and logistical capacities, high gender inequality, ecosystem degradation, and underdeveloped road networks impeding farmers' market access are among critical bottlenecks handicapping the sector's performance and growth prospects.

14. Underdeveloped and poorly maintained road networks severely undermine the development of dynamic and competitive agriculture markets, incentives among rural communities to invest, and sustained rural growth. The country's transport network is grossly underdeveloped and ranks low across most indicators. Despite being the backbone of Madagascar transport sector, good roads are scarce, with a road density of 5.4 km per 100 km² of land, among the lowest in Sub-Saharan Africa and the world. Of the 32,000 km of roads in Madagascar there are 11,000 km of national roads (that is, *routes nationales*, the rest being regional and local roads), of which 6,000 km are paved. About 40 percent of paved national roads are in fair to poor condition, requiring periodic maintenance, while most of the unpaved national roads require rehabilitation. Over 70 percent of regional and local roads are in poor condition. The Rural Accessibility Index (RAI), measured by the share of the rural population who live within 2 km of an all-season road is 11.4 percent (among the lowest globally), which means that 17 million rural residents are left unconnected.¹⁰ Poor access to markets, particularly during the rainy season, is a major constraint and road quality indicators have shown a pronounced downward trend since 2013 due lack of investment in maintenance, rehabilitation and improvements. During the rainy season, many roads are not passable, further isolating rural communities and jeopardizing their livelihoods. Limited access to electricity¹¹ also constrains the use of water pumps as well as storage, processing, and cold chain infrastructure that can help reduce post-harvest losses.

15. Rural landscapes are affected by a downward spiral of poverty and associated depletion of natural capital and ecosystem services. Widespread use of traditional slash-and-burn agriculture degrade soils, induce erosion and downstream siltation of watercourses and irrigation schemes, and contribute to broad-scale land and water



degradation. In addition, high population growth and limited economic opportunities outside of subsistence agriculture drive ever-increasing demand for new agricultural land, fueling deforestation, accelerating land use change, and inciting the rapid depletion of the country's natural capital (soils, pasture, and forests) at an accelerated pace.¹² In return, this depletion undermines the provision of ecosystem services on which so many rural poor depend. These include provision of food and wood-fuel, hydrological services to downstream water users (e.g., irrigation systems, domestic water supply systems, hydroelectric power producers), erosion control, carbon storage, and the preservation of the island's unique biodiversity. In 2018, the total annual cost of land degradation for Madagascar was estimated at US\$1.7 billion or 23 percent of the country's GDP¹³. Losses in crop production due to erosion and land degradation over the last three decades are estimated at US\$4.1B, with a yearly average of US\$141.4 million, equivalent to 5 percent of agricultural GDP¹⁴.

16. Women's labor force participation is high in Madagascar; however, their employment options are often limited to vulnerable and informal sectors. Women's labor force participation is high at 83 percent and close to the 89 percent for men, however, 90 percent of all working women are self-employed and 87 percent are employed in vulnerable work; these figures are higher than the 86 and 80 percent of men who are self-employed or in vulnerable work, respectively.¹⁵ Women's limited employment options is reflected in their lower earnings, which were found to be 34 percent lower than that of men in the 2014 Poverty Assessment for Madagascar.¹⁶ The share of women and men engaged in agriculture has been decreasing over the past years and, as of 2019, stood at 60 percent for women and 68 percent for men. Women's productivity in agriculture is hampered by their limited access to inputs, resources and information. Notwithstanding their disadvantages in the sector, women farmers are more likely to adopt climate-smart agricultural practices than men farmers when these have access to resources.¹⁷ A gender assessment undertaken during the preparation of the proposed operation revealed a gender gap in the participation of women in local and community organizations due to women's higher burden of household responsibilities. The assessment also revealed that men play a leading role in all aspects of the rice value chain, distributing work to other family members as needed, with women being primarily responsible for processing and marketing and other post-harvest tasks that only require the use of easy-to-handle tools.

17. Insecurity of land tenure remains a key bottleneck to rural sector development and poverty reduction in Madagascar. Tenure security is important not only for agricultural production. It also allows people to diversify their

⁸ World Development Indicators (accessed December 1, 2022)

⁹ Beyond sector-specific factors, the importance of subsistence agriculture in the economy is largely related to the lack of economic opportunities in the formal sector. Job creation in industry and services has not been sufficient to support a more structural transformation of the sector, unlike countries such as Bangladesh or Rwanda, which have seen the share of agricultural employment decline and the productivity of the sector increase. This lack of structural transformation in Madagascar contributes to maintaining a low-productivity, largely shock-prone subsistence agriculture sector and hinders the modernization of the sector and the mobilization of productive investments.

¹⁰ Madagascar: Spatial Analysis of Transport Connectivity and Growth Potential. June 2018.

¹¹ An estimated 33.7 percent (15 percent on grid) of the population have access to electricity, compared with an average 48.4 percent for Sub-Saharan Africa in 2020, which places the country in the list of the top 13 access-deficit countries in the world

¹² World Bank. 2018. The Changing Wealth of Nations 2018: Building a Sustainable Future. Washington, DC: World Bank and World Bank. 2021a. The Changing Wealth of Nations 2021: Managing Assets for the Future. Washington, DC: World Bank.

¹³ UNCCD. 2018. Country Profile of Madagascar. Investing in Land Degradation Neutrality: Making the Case. An Overview of Indicators and Assessments. Bonn, Germany: UNCCD.

¹⁴ World Bank 2022. Madagascar Country Environmental Analysis (report number pending).

¹⁵ Data for 2019. World Bank Madagascar Gender Assessment, "Unlocking Women and Adolescent Girls' Potential: Challenges and Opportunities for Women and Adolescent Girls' Empowerment in Madagascar," upcoming report.

¹⁶ Ibid.

¹⁷ Ibid.



livelihoods by using their land as collateral, renting it out or selling it. Tenure issues affect the everyday choices of poor rural women and men, such as which crops to grow and whether crops are grown for subsistence or commercial purposes. They influence the extent to which farmers are prepared to invest in the long-term wellbeing of their land or to adopt new technologies and innovations. Lack of secure land tenure exacerbates poverty and has contributed to social instability and conflict in many parts of the world. In 2005, Madagascar embarked on an unprecedented land reform consisting in decentralizing to communes the competence of formalizing the property rights on non – titled but occupied croplands. In 17 years, the 500 communes¹⁸ equipped with decentralized Land Offices delivered 808,000 land certificates¹⁹ of which 70 percent were supported in the scope of the World Bank-funded Madagascar Agriculture Rural Growth and Land Management Project (CASEF)²⁰. The National Land Program placed a greater emphasis on women's land rights, however, communication on land rights often did not target women or women-headed households resulting in land certificates being issued mostly in the husband's name. Overall, only 23 percent of land is titled solely in the name of women. Social security and use as credit collateral are reported to be the main drivers of beneficiaries' motivation for land certification. The recently revised 2022 land Law is endorsing the full legal value of land certificate when mortgaged to microfinance institutions. Based on the experience to date, it is expected that the mass distribution of land certificates will lead to increased land-related investment in the coming decade.

18. As the main staple crop, rice dominates Madagascar's agriculture economy. Rice production accounts for 70 percent of the country's total agricultural production, 40 percent of the island's cultivated area, and virtually all its irrigated land (WB 2020). High annual rainfall (1200 mm per year and above) and abundant freshwater water resources generally underpin favorable conditions for water-intensive rice production across much of the country; from the rainfed central highlands to the irrigated and terraced lowlands, and semi-flooded coastal zones. Roughly 4 of 5 Malagasy agricultural households grow rice, relying on family labor and mostly on small holdings. Most cultivate primarily for subsistence, are chronically food insecure, and generally lack basic services such as improved water sources and electricity. A mere 20 percent of production is marketed as surplus. Women in Madagascar make a significant contribution to rice farming, processing, and marketing, but only have limited access to productivity-enhancing technical knowledge and innovations that can reduce their labor and provide them with additional income. While on par with much of Sub-Saharan Africa, rice productivity in Madagascar is markedly lower (2.7 tons/ha) than the world average (4.7 tons/ha in 2018), and many times lower than in East Asia (6.97 tons/ha). Small-scale schemes account for roughly 86 percent of total land under controlled water management; medium (13 percent) and large-scale schemes (0.4 percent) account for the rest.²¹ Insufficient maintenance and upkeep of irrigation infrastructure and weak management capacity among user groups plague many irrigation schemes. As a result, unreliable water supply coupled with insecure land tenure arrangements, limited extension and input supply networks, poor connectivity to downstream markets and low farmgate prices stymie farmer incentives to uptake improved, productivity-enhancing technologies such as high-yielding seeds, fertilizers, and machinery. Hampered by stagnating yields and structural deficiencies and buttressed by recurrent downside shocks, the rice sector's performance has languished.

19. Rice is also a crucial but fragile linchpin of the country's food and nutrition security. Madagascar has among the highest per capita consumption of rice globally. Consumed three times per day and with an estimated annual per capita consumption of 120kg—more than twice the world average (53kg) and above many other major rice producing

¹⁸ Out of 1695 Communes forming the national territory

¹⁹ Compared to 679,000 land titles issued by the central State land services in 125 years

²⁰ Between 2018 and 2022, CASEF-supported communes distributed some 600,000 land certificates.

²¹ World Bank. 2020. *Unlocking the potential of irrigation schemes in Madagascar* (P168000).



countries such as China (77kg)—rice accounts for more than half of the average household daily caloric intake. At the same time, Madagascar has the fourth highest rate of chronic malnutrition, with nearly 1 in 2 children (49.7 percent) under five years of age being stunted and 7.9 percent wasted.²² More than 1 in 3 women (37.8%) of reproductive age have anemia. While malnutrition is high across the country, chronic malnutrition in children is a result of dietary patterns more than poverty; poverty and acute malnutrition is most widespread in the south of Madagascar, but the highest rates of chronic malnutrition can be found in the rice producing regions where dietary diversity is low. Malnutrition is widespread among women of reproductive age and children are consequently born stunted. Each malnourished child risks a lifetime of cognitive and physical limitations, presenting a severe drain on human capital development. It is estimated that this equates to roughly 7-12 percent annually in lost GDP. To address these challenges, critical investments are needed to strengthen the productivity and diversify food systems, but also to catalyze improved nutritional outcomes at household and community levels, particularly among women and youth.

20. Madagascar's per capita production of rice has been declining amid growing rice imports. National production is insufficient to meet domestic demand and covers about 85 percent of consumption requirements on average.²³ Paddy rice production declined from 4.7 in 2010 to 4.2 million tons (-10 percent) in 2019 (See Figure 2). In 2020, per capita production was 156kg, down from 230 in 2010. According to the Ministry of Industry, Trade and Handicrafts, domestic utilization of paddy rice in Madagascar is about 3.9 million tons, whereas domestic production is 3.5 million tons. To fill this gap, the country relies on subsidized imports, estimated at 420,000 tons of paddy rice equivalent in the 2020/21 marketing year, slightly below the previous five-year average²⁴. With domestic production buffeted by pest outbreaks, climate shocks, and market disruptions associated with the Covid pandemic, rice imports during the most recent marketing year (2021/22) are widely believed to have reached previous records not seen for more than a decade. Moreover, the rising costs of food, fuels and fertilizers stemming from the Ukraine conflict have weighed increasingly heavy on the Government's food import budget and fiscal balance.

21. The deterioration and neglect of existing irrigation systems has contributed to the stagnation of rice production. Over the last decade or so, rice production has fluctuated around a flat trend, even as irrigation schemes have deteriorated. However, the demand for rice has grown with population growth and a dietary shift towards rice relative to more expensive food. This has resulted in excess demand being met through growing rice imports, that have roughly doubled over this period. Poor irrigation infrastructure performance is driven by damages due to cyclones and heavy storms, and by gradual siltation of intakes and canal systems due to ongoing deforestation in the watersheds coupled with lack of sand-traps in their design and lack proper maintenance. Survey findings indicate that Water User Associations (WUA), mandated to ensure sustainable irrigation management, are widely prevalent and relatively active but are insufficiently supported. Other constraints include low seed quality, constrained irrigation water availability, low fertilizer affordability and levels of use, improper leveling of paddies and poor crop husbandry practices. It's estimated that as much as 40 percent of irrigated schemes are not under active production. A 2020 study by the World Bank²⁵ estimated that Madagascar's total command area for irrigation is 2.15 million hectares spread across roughly 12,000 irrigation schemes. Small and medium-scale schemes cover about 86 percent of this area, and 950,000 hectares,

²² IFPRI, 2020. "Global Nutrition Report 2020: From Promise to Impact: Ending Malnutrition by 2030," IFPRI books, International Food Policy Research Institute (IFPRI), number 978-0-89629-584-1

²³ Coady, D., P. A. Dorosh, and B. Minten. 2009. "Evaluating Alternative Policy Responses to Higher World Food Prices: The Case of Increasing Rice Prices in Madagascar." *American Journal of Agricultural Economics* 91 (3): 711–722 in FAO. 2020.

²⁴ *Ibid.*

²⁵ World Bank. 2020. *Unlocking the potential of irrigation schemes in Madagascar* (P168000).



or 44 percent, are traditional farmer-built schemes. Small and medium-scale schemes, which produce over 85 percent of Madagascar's rice output, are the key to the country's food security. This is about 75 percent of the rice consumed in Madagascar, with the remainder coming from large schemes, other production systems (e.g., uplands rainfed) and increasingly imports.

22. In recent decades, the livestock subsector has been declining in economic importance. Poultry (61 percent) and cattle (36 percent) account for the major share of the livestock population, followed by pigs (22 percent). Fish farming is uncommon: 5% of households practice pond culture and 4% rice-fish farming. However, these practices are gaining ground in the Vakinankaratra, Itasy and Amonon'I Mania regions. Production falls well shy of demand and has been decreasing since the early 1990s along with the per capita availability of beef, milk, and fish. The volume consumed remains very low compared with global averages—about 10 kilograms of meat, fish, and poultry per capita per year against a global average of 40 kilograms. In many areas, livestock farming makes only a limited contribution to household food security and income. Milk yields are less than 5 liters per day over a short 190–200-day lactation period but could easily reach 10 liters or more per day over a 220–230-day lactation period with improved feeding and water supply. Dairy production is predominantly in the Vakinankaratra region, representing more than 80 percent of national production (120 million liters) in 2018. A 2015 study noted that the regions with large herds of livestock such as Atsimo Andrefana and Androy are less affected by stunting. Richer, more diversified diets are more common in regions with large herds of sheep and goats and which rely less on staple grains; these regions also produce larger amounts of rice substitutes, such as cassava and maize.

23. Madagascar's high vulnerability to climate change poses acute risk to Madagascar's food systems and the country's food security. Madagascar is regularly subject to powerful cyclones and other extreme weather events that damage crops and infrastructure. These are predicted to increase in number and severity under climate change. In addition, rainfall patterns in some areas of the country will intensify leading to increased flooding and erosion, while in other parts of the country, especially the south, incidences of drought will become more frequent. Underinvestment in infrastructure, roads, agriculture research and innovation, extension and the like have undermined the ability of farming communities to mitigate, cope with and recover from climatic shocks. To unlock productivity gains, catalyze needed adaption and diversification of Madagascar's rice-based food systems, and improve farmer incomes, broad-scale and sustained investments will be needed. Priority actions include: i) improving farmers' management of irrigation infrastructure, water, soil and other natural resources; ii) enhancing their timely and affordable access to quality inputs such as certified seeds and fertilizers and decision-support services (e.g., agro-advisory, market prices); and iii) promoting farmer take up of Climate-Smart Agriculture (CSA) technologies and practices that will at once increase yields, improve resilience and lower agriculture's carbon footprint.

24. While the agriculture sector is highly vulnerable to climate change, it can also be an important contributor to its solution. Crop and livestock production is relatively carbon-intensive, compared with the rest of the economy, representing 41 percent of total 2019 Greenhouse gas (GHG) emissions in Madagascar. Land-use change and forestry (57 percent of total emissions) and industrial processing and waste (less than 5 percent) make up for the rest, according to Madagascar's Nationally Determined Contribution (NDC). Broad-scale adoption of improved technologies and management practices by Malagasy farmers offer not only considerable potential for driving needed adaptation and strengthening the resilience of agriculture and food systems, but also strong scope for catalyzing emission reduction and enhanced carbon sequestration. Priority should be given to investments that not only enhance productivity and



increase output, but also to those that ensure that Madagascar's agriculture production and food systems make a positive and lasting contribution to delivering on the Bank's 2030 vision of healthy people (i.e., secure and safe food and nutrition), a healthy planet (i.e., environmentally sustainable), and a healthy economy (i.e., inclusive incomes, jobs, and livelihoods).

25. The Government of Madagascar remains committed to achieving food self-sufficiency and boosting rural sector growth and resilience. Sustained productivity and sector growth would have significant impacts on the well-being of millions of Malagasy, particularly those in the poorest and most vulnerable households, who spend the largest share of their income on food. The Government's vision under the National Emergence Plan for 2019-2023 (*Plan d'Emergence Madagascar* (PEM)) prioritizes achieving self-sufficiency in rice production as a means to strengthening the country's food security. In particular, the PEM calls for new investments to intensify and expand rice production via the rehabilitation of existing irrigation schemes and the buildout of 100,000 hectares of new irrigated areas. This vision builds on the Government's decades-long strategic priorities for the rice sector, as outlined in its National Strategy for the Development of the Rice Sector 2016-2020 (*Stratégie Nationale du Développement Rizicole* (SNDR)). Among priority actions, it aims to: (i) promote research and technology development; (ii) strengthen agricultural extension services; (iii) upgrade rural infrastructure and improve market connectivity; and (iv) enhance rice sector governance. In addition, Madagascar's NDC aims to contribute to its climate targets in part by promoting broadscale adoption of improved farming techniques such as Sustainable Rice Intensification (SRI), Alternative Wetting and Drying (AWD), through CSA adoption and climate adaptation, and through improved water resources management. Launched in June 2022, the National Agricultural Development Plan for Food Self-Sufficiency in Madagascar aims to accelerate the development of the agricultural sector to achieve food self-sufficiency and improve the daily lives of the most vulnerable. Proposed project interventions also align with the recently approved national strategy to promote nutrition-sensitive agriculture.

26. With an abundance of untapped arable land²⁶ and water resources, Madagascar agriculture has considerable growth potential. With improvements in technology, productivity and management, and enabling policies and investments the agriculture sector is capable of not only meeting domestic food consumption needs, but also providing a diversified and competitive range of products for export markets. Through enhanced value addition in agro-processing, transport and related services, it can create more jobs for both farming and non-farm households. With improvements in technology, productivity and management, a more productive, resilient and lower carbon-emitting agriculture sector could not only meet the food, nutrition, and livelihood needs of the Malagasy people, but could also generate a diversified range of products for domestic and export markets

C. Proposed Development Objective(s)

To increase the productivity and strengthen the resilience of rural livelihoods in targeted areas in Madagascar.

²⁶ Agricultural production is not constrained by a shortage of cultivable land. In fact, out of the 41 million hectares of agricultural land, only 5.2 percent (3 million hectares) are cultivated annually; of this, less than 2 million hectares are permanently cultivated. The remainder of the area is under pastures (37.3 million ha) and forest (13 million ha).



27. Project interventions will be strategically oriented via an integrated landscape management and market shed, market-led approach. The PDO will be achieved primarily by focusing on targeted market catchments in two regions with high agriculture potential, Alaotra-Mangoro and Sofia, where ongoing WB-support to transport upgrades and land reform, among other investments, are expected to enhance access to markets and secure land tenure among rural farming communities. Through a more holistic and systems-based approach to rural development, one that recognizes the interdependence of farming communities and the ecosystems on which their livelihoods depend and the critical role that market and land tenure security play in catalyzing and sustaining their investments, the project will: (i) support community-driven integrated landscape level planning, restoration, and management; (ii) intensify sustainable irrigated agriculture and improve water management via the rehabilitation of irrigation infrastructure and capacity-building support to WUAs; and (iii) strengthen value chains by upgrading feeder roads, promoting adoption of CSA technologies and practices, and catalyzing diversification of livelihoods, incomes and diets. Aligned with the CPF's three HLOs, the project will aim to achieve the following PDO outcomes: i) yields for targeted crops increased; ii) volumes of marketed surplus of target crops increased; iii) household incomes increased; iv) household-level consumption of nutrient-rich foods increased; and v) land area (watersheds, schemes) under sustainable management practices expanded, in the project intervention areas.



D. Project Description

28. The proposed project is an Investment Project Financing (IPF) of US\$200 million (IDA) and US\$25 million (AFD) co-financing, structured around three core technical components that support: (i) community-led restoration and management of watersheds in target areas; (ii) sustainable intensification and improved management of irrigation infrastructure and services; and (iii) strengthening value chains and livelihoods. A fourth and fifth component will cover project management activities and provide for a Contingency Emergency Response Component (CERC) to enable a rapid response in the event of a crisis.

29. Component 1: Promoting community-led restoration and management of watersheds in target areas (US\$23.0 million). With an objective to reduce erosion and restore ecological services that will safeguard and support the sustainability of agricultural investments. The investments upstream in the watershed will also promote positive biodiversity outcomes by increasing habitat, and reducing siltation, around Lake Alaotra, a Ramsar site, and increasing ecological corridors to the forest areas of protected areas that are on the frontiers of the project intervention zone. An ecosystem index tool will ensure that actions related to biodiversity and ecosystem services are strongly linked to productive activities of the project. Component 1 will consist of 3 subcomponents:

30. Sub-component 1.1: Development and implementation of the Watershed Protection Plans (US\$18 million). Gully erosion imposes severe negative impacts on agricultural activities and irrigation infrastructure and must be addressed. Water sources are threatened by forest cover loss and erosion and exacerbated by the impact of climate change. Forest and degraded landscape restoration via the planting and sustainable management of trees and other vegetative cover to stabilize erosion, safeguard water sources, and preserve the regularity of water flows and soil infiltration are nature-based solutions that are the most effective remedy. The project will finance watershed restoration activities with an aim to curb erosion and siltation into the downstream irrigation schemes. These activities will focus on promoting reforestation and agroforestry in project zones. Tree species to be chosen will consider the needs of local populations such as energy and fuelwood, timber, fruit trees insofar as they can contribute to promoting economic opportunities as well. Ecological appropriateness of different species will be considered, such as soil conditions, to provide the greatest chance for survival as well as avoiding destructive species. Native species, that are often slower growing, will also be planted in consultation with communities and positive biodiversity outcomes will be promoted through the identification of species and areas that increase wildlife habitat or can provide ecological corridors.

31. These efforts will require clear management plans to allow local communities to generate incomes streams while ensuring that installed tree cover fulfills the role of reducing erosion sustainably. The feasibility studies for the rehabilitation of irrigation schemes included draft watershed protection plans for each of the identified perimeters. Local community groups in collaboration with and according to the directives of the Ministry of Environment and Sustainable Development, including the forest administration, will be the main entities involved in reforestation and watershed restoration activities, with support from NGOs or associations. Where conditions enable, the project will incentivize community-led investments via either: (i) cash payments in proportion to the number of trees planted and managed sustainably in upstream watersheds; or (ii) facilitation of the issuance of a land certificate on cropland planted with trees, with support from local land offices. The choice between an incentive by cash or by land certificate will be established in an inclusive manner at the local level during the programming of activities and will be based on an assessment of locale-specific circumstances. A support for the creation of nurseries at the local level is planned to



facilitate the supply of cash and fruit tree saplings. To ensure participation of women farmers and increase their land tenure, the Project will support awareness raising and information sessions targeting women and men so that they are aware of women's land rights and process for the issuance of a land certificate and will work with the land authorities to improve the capacity of agents to promote and issue land certificates solely in the name of a women farmer or jointly with her husband. The project will also seek gender equity or minimum representativeness in Local Recognition Committee members as well as in Local Land Office agent recruitment. Land certificate format will be designed to allow joint inscription of spouses.

32. Sub-component 1.2: Promoting agroecological practices (US\$5.0 million). The project's integrated landscape approach highlights the strong interactions between the inter-connected elements of the natural ecosystem. Agroecology makes it possible to approach the diversity of the spaces in the same territory with adapted practices to the constraints by promoting adapted productions, practices respectful of natural resources (soil, water, biodiversity). It is based on interactions between livestock, agroforestry, production diversification, technical and social innovations but also on interactions between different areas in the same territory. The project will support the dissemination of agro-ecological practices adapted to the specificities of the different areas of the landscape/watershed (e.g., wooded slopes, highland, lowlands, rice fields) and aimed to ensure food security and stable income for producers. This will involve the strengthening of capacities (training, support) of producers and cooperatives; the dissemination of seeds, tools and adapted practices; monitoring of developments in production, interactions between zone and practices. The choice of promoted practices should be based on an in-depth analysis of the soil-climate-hydro contexts of each zone and interactions between zones. It will be able to draw on the many experiences already carried out in various projects financed by the WB, AFD, among others. The sustainable adoption of new practices also requires studying the links between agrosystems and socio-economic dynamics. This is a requirement for proposing adapted solutions to the problems faced by farmers. The project will thus support studies to define practices dissemination and methods, in line with the other components of the project. A "research and development" component could be associated with support and capacity building in order to monitor farm and landscape/watershed performance and to document and learn from best practice. This activity will also entail the identification of women's producer groups and cooperatives and assessments of their specific needs. This will aid appropriate integration of gender considerations such as women's role in family nutrition, time use and limited access to tools and adapted practices in all training provided to producers and cooperatives, seed dissemination and provision of tools and adapted practices.

33. Component 2: Sustainable intensification and management of irrigation infrastructure and services (US\$70.0 million). With an objective to facilitate improvements in the quality and performance of existing water-management infrastructure (irrigation schemes transferred to WUAs and dams, dikes and main drains non-transferred and under the responsibility of the Regional Directions of MoA), Component 2 will consist of two subcomponents:

34. Sub-component 2.1: Rehabilitate and strengthen management of transferred irrigation infrastructure (US\$65.0 million). The project will support the rehabilitation of irrigation infrastructure covering an estimated 30,000 ha in the two selected regions: Alaotra-Mangoro (26,000 ha) and Sofia (4,000 ha). Feasibility studies have been carried during project preparation showing notable potential in these 2 regions. The average farm size is 1.06 ha and 1.76 ha respectively (28,000 families, 150,000 people), rehab cost is US\$1,730 per ha and US\$2,592 per ha with Internal rates of return averaging of 31 percent and 13 percent respectively. The elaboration of the feasibility study has emphasized the ownership and participation of the Water User Association (WUA, or *Federation d'Irrigants*) during the process and



will continue to do so from feasibility study to detailed design, and through the launch of bidding and the procurement works. At each stage, certain basic co-financing milestones will be put in place to optimize WUA's participation and ownership. A consulting service for detailed design and bidding documents and construction supervision will be launched in two lots: one for each region, in order to ensure concurrence and high quality of designs and consistent construction supervision. The construction phase will proceed during years 2-4 of the project in order to have at least 1 year of defect liability and proper training of the WUAs in appropriate operation and maintenance (O&M).

35. A Technical Assistance (TA) is planned to be launched with aim to work with the WUAs to accompany the process from the design of the rehab to the construction supervision and particularly also during the 1st year after construction. The feasibility studies (FS) carried out ensured the participation WUAs and agreements on follow up actions. The FS show that WUAs are functional in most schemes, with legal regulations, teams in place, often offices. Yet, they often do not hold General Elections, and thus suffer from infrequent leadership turnover, and more importantly do not have operational budget. In summary, there is strong scope to continue and improve the socio-organizational aspects around irrigation. The TA will work with the WUAs from the early stages of design until after the 1st year of finishing the rehabilitation works and will include agronomical and socio-organizational training to ensure the long-term sustainability of the rehabilitated irrigation schemes. The TA will consider the landscape restoration and management plans developed under Component 1 to ensure consistency with other project interventions. The project will support the delivery of a community and behavior change program, such as the Gender Action Learning System (GALS), to address norms that limit women's participation in WUAs, including the heavier burden of household responsibilities held by women, and increase the participation of women and youth in the WUAs as well as in the community consultations during the construction of irrigation infrastructure. Identified women leaders will be supported with leadership and personal development training.

36. Sub-component 2.2: Support to the Fund for the Rehabilitation and Maintenance of the Strategic Infrastructure (SI) of the Agricultural Hydro Networks (FRERHA) (US\$5 million). Most of the irrigation schemes in the feasibility study show a portion that will be transferred to local users for management (irrigation canals and secondary drains) but there is always a part of the infrastructure that has a public role (such as dams, dikes, access roads and major drains). These public portions are known in Madagascar as "Strategic Infrastructure" (SI) and are not transferred, meaning they are managed by the Regional Direction of the MinAE. Since the Regional Directions of MinAE do not have sufficient funds, SI often suffers the most from severe lack of maintenance. The FS have identified options to create a Fund for the Maintenance of the SI in the Agricultural Hydro Networks (FRERHA). Legislation (decree) has been drafted to put in place the FRERHA to ensure proper O&M of the SI. The project will support establishing the FRERHA and ensuring its sustainability in the Alaotra-Mangoro and Sofia regions in cooperation with the two Regional Directions of MinAE. This will include participation of the WUAs in the definition of maintenance works and an implementation plan and elaborating framework contracts with contractors for the O&M in the implementation of the FRERHA.

37. Component 3: Strengthening livelihood resilience and value chains (US\$112.0 million). With an objective to catalyze climate-smart investments and promote diversification of food systems, incomes and diets for more productive, resilient and healthy communities and livelihoods, Component 3 will consist of three subcomponents:

38. Sub-component 3.1: Promoting climate-smart and nutrition-sensitive agriculture technologies, practices and interventions through vouchers (US\$72.0 million). This sub-component will promote investments in the deployment and adoption of CSA and nutrition-sensitive innovations and technology packages among smallholder farmers and



cooperatives in targeted areas. The project will mobilize a Voucher Management Agency (VMA) to design (via the development of a voucher manual) and administer an input voucher scheme. The vouchers distributed under this subcomponent will be used by beneficiaries to source improved seeds (including biofortified black beans rich in zinc and iron), cuttings (including cassava and bio-fortified orange-flesh sweet potato), fertilizers (including organic and agro-ecological fertilizers), plant protection (e.g., bio-pesticides such as *Bacillus Thuringiensis*), livestock and animal nutrition/health products, tools/equipment, etc. from selected private input suppliers (i.e., agro-input dealers). Participating agro-input dealers will be vetted, registered and trained to provide extension support directly to smallholder farmers and cooperatives to facilitate their optimal adoption; special attention will be given to increase the capacity of agro-input dealers to provide extension support tailored to the particular needs of women smallholder farmers. Registered agro-input dealers will benefit from direct financial and business development services assistance support under this sub-component. The VMA will also provide support to farming cooperatives to facilitate the setup and management of Farmer Field Schools and community garden demonstration plots to facilitate pre-sale and after-sales marketing and extension services by agro-input dealers. To facilitate income and dietary diversification and improved nutritional outcomes, project interventions under this sub-component will place special emphasis on promoting homestead and community vegetable gardens, fruit tree orchards, integration of small ruminant and poultry farming, and higher consumption of nutrient-dense foods. In collaboration with the National Office of Nutrition (ONU), the project will promote at community and household levels culinary recipes adapted to each region. Prioritized value chains include irrigated and rainfed rice, maize, black eyes, sweet potatoes, fruits and vegetables, and livestock (poultry, small ruminants, swine and dairy farming). A community and behavior change program, such as the Gender Action Learning System (GALS), will be supported to increase uptake and utilization of vouchers by women farmers and promote more equitable sharing of household responsibilities.

39. Sub-component 3.2: Strengthening value chains via matching grants (US\$16 million). This sub-component will support via matching grants and credit guarantees subproject investments by farmer cooperatives, seed producers, seed producers, agro-processors, traders, agro-equipment manufacturers and machinery suppliers, and other value chain actors. Eligible groups will be encouraged to include women as members, additionally, women-led farmer groups will be identified and provided with needed capacity support to increase their probability of obtaining matching grants. Eligible sub-projects include but are not limited to construction of storage facilities, purchase and/or leasing of farming equipment, irrigation pumps and related materials, post-harvest processing (i.e., milling, drying) and storage technologies, and acquisition and installation of food processing units. The matching grant program will be administered by the Fonds de Développement Agricole (FDA) and will build on FDA's experience in administering similar programs in recent years, including under the Bank-financed Sustainable Landscape Development Project. The project will mobilize TA to provide institutional capacity-building support to FDA and technical backstopping to grantees to ensure quality and achievement of the subprojects. A matching grant manual with various windows (small, medium and large) is under preparation. Matching grants will prioritize the mobilization of productivity-enhancing and labor-saving mechanization equipment, value addition transformation and farmer-led irrigation development (FLID) by farmers groups and by potential investors to benefit from the pull-effect and public private partnerships (PPPs). During project preparation, the PIU mobilized a FLID diagnostic highlighting strong growth potential at the national level and, more specifically in the two target regions of Alaotra Mangoro and Sofia (especially along the eastern shore of Lake Alaotra and stretching along the RN31 near Port Berge and Mampikony in Sofia). Additional scoping studies will be mobilized to identify more definitely high potential areas with favorable market access and water resources to inform more precise targeting of



project interventions.

40. Sub-component 3.3: Development of climate-resilient rural road infrastructure (US\$24 million). Upgrading road networks that connect people to markets, while also making roads greener and more resilient to the impacts of climate change—are all important part of the global climate adaptation effort. Good roads are also a crucial ingredient to incentivizing sustained adoption of climate-smart technologies and practices among farmers so critical to the development of competitive and resilient value chains. This sub-component will finance upgrades to feeder roads, small bridges and other rural market infrastructure to improve the accessibility of production areas to processing and consumption centers, and downstream end markets. Complementing activities under sub-component 3, infrastructure upgrades will further improve the competitiveness of supported value chains. They will also strengthen the resilience of agri-food systems and improve food security. Aligning with the project’s spatial approach, feeder roads in proximity to project-supported irrigation schemes and those connecting key market sheds to important downstream markets, especially strategic secondary cities, will be prioritized. The activity will prioritize climate-resilient infrastructure that is designed and built in a way that anticipates, prepares for, and adapts to changing climate conditions. Built on the ongoing CASEF project, this component will also support the development of decentralized, community-driven mechanisms for road maintenance. The project will finance the establishment of a road maintenance financing mechanism and will provide training and equipment to the “maître d’ouvrage” communes and regional directorates in charge of public works.

41. Component 4: Project Management and Monitoring and Evaluation (US\$20.0 million). This subcomponent will support all aspects of project management and M&E. It will fund activities relating to Project startup, M&E, knowledge management, communications, and compliance with fiduciary, procurement, environmental, and social requirements including corporate commitments (such as citizens’ engagement activities). It will also cover staff costs.

42. Component 5: Contingency Emergency Response Component (US\$0.0 million). This component will provide immediate response to an eligible crisis or emergency, as needed. Following an eligible crisis or emergency, the Borrower may request the Bank to re-allocate project funds to support emergency response and reconstruction. This component would draw from the uncommitted financial resources under the project from other project components to cover emergency response.

Legal Operational Policies

	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Areas OP 7.60	No

Summary of Assessment of Environmental and Social Risks and Impacts

The environmental and social risk classification (ESRC) is substantial. The relevant standards that have been identified



during the through the environmental and social risk screening at concept stage of the project are: ESS1: Assessment and Management of Environmental and Social Risks and Impacts; ESS2: Labor and Working Conditions; ESS3: Resource Efficiency and Pollution Prevention and Management; ESS4: Community Health and Safety; ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement; ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources; ESS8 Cultural Heritage; ESS10: Stakeholder Engagement and Information Disclosure.

Environmental risks and impact. The proposed project will bring significant benefits to the communities in the target regions through the provision of enhanced services, technical assistance and sectoral coordination, as well improvements to agriculture infrastructure, the rehabilitation/construction of feeder roads and bridges, access to matching grant to the farmers to increase access to markets and other investments to unlock agribusiness potential. Although the impacts of the Project are likely to be positive, these activities carry several risks that are mainly generated by the activities under Component 1; Component 2 and Component 3. The Rehabilitation and expansion of existing irrigation infrastructures, rehabilitation of feeder roads and bridges, rehabilitation and upgrading of market and post-harvest infrastructures include small-to medium-scale of civil works will more than likely generate adverse site-specific risks and impacts, such as disposal of material excavated during construction/rehabilitation activities, the occupational health and safety of workers during construction and operational phases, increased levels of dust and noise and community health and safety risks from, in particular, the risk of pollution to surface and groundwater sources during dredged of channels; generation of solid and liquid waste. In addition, the component 3 will propose to improve farmers' access to fertilizers and seed systems that could increase the potential use of pesticides and fertilizers that could cause adverse health effects and leading to degradation of surface and groundwater quality for irresponsible use, storage and disposal of these chemicals. Based on the project activities the potential adverse risks and impacts on human populations and/or the environment are not likely to be significant and will be site specific.

Social risks and impact. It is expected that project activities will have essentially positive social impacts by financing rural infrastructure investments, irrigation infrastructure, community markets and feeder road. However, the proposed project activities to be financed through component 2 and 3 on improving agriculture infrastructure may include small to medium scale civil works. These activities are likely to induce some social risks and impacts that are however mostly temporary, predictable and/or reversible. Labor influx and associated risk and impacts can be a point of concern, especially on community health, (including the risk of transmission of diseases such as STDs, as well as the transmission and propagation of COVID-19) and Gender-based violence (GBV)/ Sexual Exploitation and Abuse (SEA)/Sexual Harassment (SH). No irreversible social risks related to land access is expected. No physical displacement is expected for the project, however there will be a risk of land acquisition and temporary displacement during the works. The innovative voucher program and the matching grant program risk might be the inadequacy of criteria of eligibility which could led for exclusion of eligible person. Although civil works are not expected to have direct physical impact on the heritage monuments (cultural heritage mainly in Atsinanana region), there will be indirect impacts from the movement of construction machinery, presence of work force during rehabilitation works (mainly feed road) which need to be adequately managed. The initial GBV risk screening has classified the GBV/SEA/SH risk as substantial which is mainly linked to labor influx in targeted regions. In line with the recommendation of the GBV Good Practice Note, specific GBV measures will be applied during preparation and implementation. Measures to be taken will include but are not limited to (a) development and implementation of GBV action plan, (b) a requirement that the project includes clauses on workers' conditions and management, child protection, and GBV prevention in all contracts (code of conduct); (d) the reinforcement of the grievance mechanism (GRM) to ensure that any incident related to GBV will be addressed in an effective manner with sufficient social sensitivity.



Strengthening citizen engagement. In accordance with ESS10, and directives on citizen engagement (CE) in IPF projects, the project will further develop activity promoting citizen engagement. The project is expected to have at least one indicator related to CE. but will also to consider developing specific activities which promote beneficiaries' feedback, stakeholder engagement. To this end specific activities should be considered into Stakeholder Engagement Plan (PMPP); and, in addition, the project will develop and implement adapted Grievance mechanism (GM). Mitigation and Risk management. To limit these risks, the project needs to develop and to disclose by appraisal (i) a Draft Environmental and Social Commitment Plan (ESCP), (ii) a draft Environmental and Social Management Framework (ESMF); (iii) a draft Integrated Pesticide Management Plan (IPMP); (iii) a draft Resettlement Policy Framework (RPF); (iv) a draft Stakeholder Engagement Plan (SEP); (v) draft Labor Management Procedures (LMP); (vi) Grievance Mechanism (GM) as part of SEP, and the worker's Grievance Mechanism as part of the LMP; (vii) Draft model of Environmental and Social Management System (ESMS) for FIs. It is also recommended to have a full time environmental and social safeguard specialist for the project to be hired before appraisal. Finally the project should ensure that satisfactory calendar and budget are considered into the project design.

Safeguard monitoring. The M&E system of the project will include monitoring of ESS impacts and measures. The PMU as the implementing agency for the project, with the guidance of its environmental and social safeguard and with support of World bank safeguard team, will be responsible for the preparation, of the relevant ESA documents, or other appropriate safeguards tools. Monitoring checklists will be prepared based on the mitigation plans.

E. Implementation

Institutional and Implementation Arrangements

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