REQUEST FOR PROJECT
FUNDING FROM THE ADAPTATION FUND

The annexed form should be completed and transmitted to the Adaptation Fund Board Secretariat by email or fax.

Please type in the responses using the template provided. The instructions attached to the form provide guidance to filling out the template.

Please note that a project/programme must be fully prepared (i.e., fully appraised for feasibility) when the request is submitted. The final project/programme document resulting from the appraisal process should be attached to this request for funding.

Complete documentation should be sent to:

The Adaptation Fund Board Secretariat
1818 H Street NW
MSN P4-400
Washington, D.C., 20433
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Fax: +1 (202) 522-3240/5
Email: afbsec@adaptation-fund.org

PROJECT PROPOSAL TO THE ADAPTATION FUND

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A. Describe the project / programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience ..... **Error! Bookmark not defined.**

B. Describe how the project / programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project / programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy of the Adaptation Fund..... **Error! Bookmark not defined.**

C. Describe or provide an analysis of the cost-effectiveness of the proposed project / programme ..... **Error! Bookmark not defined.**

D. Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist **Error! Bookmark not defined.**

E. Describe how the project / programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund **Error! Bookmark not defined.**

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G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned ..... **Error! Bookmark not defined.**

H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy of the Adaptation Fund..... **Error! Bookmark not defined.**

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E. Include a results framework for the project proposal, including milestones, targets and indicators ..... **Error! Bookmark not defined.**

F. Demonstrate how the project / programme aligns with the Results Framework of the Adaptation Fund..... **Error! Bookmark not defined.**

G. Include a detailed budget with budget notes, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs ..... **Error! Bookmark not defined.**

H. Include a disbursement schedule with time-bound milestones..... **Error! Bookmark not defined.**

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PART I: PROJECT/PROGRAMME INFORMATION

PROJECT CATEFORY:	**REGULAR**
COUNTRY:	**SIERRA LEONE**
TITLE OF PROJECT:	**PROMOTING CLIMATE RESILIENCE IN THE COCOA AND RICE SECTORS AS ADAPTATION STRATEGY IN SIERRA LEONE**
TYPE OF IMPLEMENTING ENTITY:	**MULTILATERAL IMPLEMENTING ENTITY (MIE)**
IMPLEMENTING ENTITY:	**INTERNATIONAL FUND FOR AGRICULTRUAL DEVELOPMENT (IFAD)**
EXECUTING ENTITY:	**MINISTRY OF AGRICULTURE AND FORESTRY (MAF)**
AMOUNT OF FINANCING REQUESTED:	**USD 9,916,925**
MAIN PARTNER:	**ENVIRONMENTAL PROTECTION AGENCY (EPA)**

1. PROJECT / PROGRAMME BACKGROUND AND CONTEXT

1.1. Natural resources and climate

1. Sierra Leone is a relatively small country, it has a land mass of about 72,000 km2 and is located within the Upper Guinean Rainforest, ecoregion. According to the Koppen climate classification, the climate of Sierra Leone is described as a tropical monsoon climate at the exception of the northern part of the territory characterized by a tropical wet climate. Sierra Leone has nine major river systems from north to south including the Great Scarcies, Little Scarcies, Rokel, Jong, Sewa, Moa and Mano Rivers. The country is divided into four main relief regions: coastline, interior lowland plains, interior plateau and mountains, each of which can be subdivided into a number of ecosystems. The coastline or coastal plains is relatively gentle and comprises estuarine swamps, terraces, alluvial plains and beach ridges. The interior lowland plains extend from the coastal terraces in the west to the east of Sierra Leone, occupying approximately 43% of the land area. At the edge of the lowland plains are the interior plateaus, made up of granite that runs from the northeast of the country to the southeast. The integrity of all these natural ecosystems and also the various agro-ecosystems are vital to ensure the ecosystem services upon which the population of Sierra Leone depend.
2. The country is characterised predominantly by a hot and humid climate with distinct wet and dry seasons. The wet season from May to October sees an average of 3000mm of precipitation with coastal areas receiving as much as 5000mm, with temperature ranging between 22-25°. The dry season is characterised by dusty, hot Harmattan winds and dry conditions, with temperatures ranging between 25-27°. Seasonal rainfall in West Africa varies considerably on inter-annual and inter-decadal timescales, due in part to variations in the movements and intensity of the Inter Tropical Climatic Zone (ITCZ). Current mean annual rainfall however has decreased to its lowest levels since the 1960s.

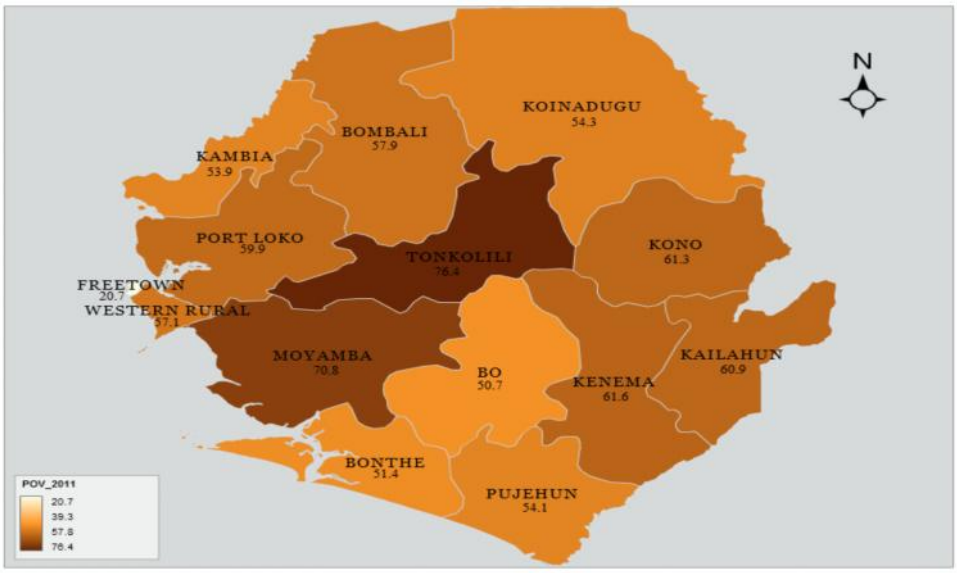
1.2. Economy, Population and agriculture

3. The Sierra Leone economy has grown since the end of the civil war in 2002 although has suffered two major recent shocks, the Ebola epidemic and the collapse of iron ore commodity price and consequently GDP growth shrinking to -21 per cent in 2015. Economic growth resumed following new investments in mining, agriculture and fisheries, with a GDP growth of 4.3 per cent in 2016. Sierra Leone's Human Development Index (HDI) was 0.420 in 2015, ranking 179th out of 188 countries. In

August 2017, the country suffered a mudslide and flooding incident in Freetown, which left 1,114 people dead or missing. Agriculture, the largest sector in the economy, accounted for 59 per cent of GDP in 2016, 62 per cent of the labour force, and 22 per cent of export earnings. Cash crops produced for export include cocoa and coffee, while oil palm is produced for domestic consumption and limited export.

4. Sierra Leone's population is around 7.4 million (40 per cent youth) and growing at 2.2 per cent annually. About 59 per cent of Sierra Leoneans live in the rural areas, where the poverty headcount of over 66 percent is double that of the urban areas. Of the former 14 districts, 11 were below the national poverty headcount of 52.9 per cent (figure 3). Poverty rates (US$ 2 a day) vary from 18.3 per cent in Koinadugu District to 83.7 per cent in Moyamba District. Women and youth are particularly vulnerable due to challenges associated with access to land, skills and capital, as well as customary practices.

Figure 1 Poverty headcount by district (2011)



5. The country's land sector is described as chaotic and increasingly unsustainable, with the main problems including inequitable access and shortage of accessible land. The absence of a registration system, cadastral mapping and information, overlapping jurisdictions for statutory and customary law undermine rights and access to land. Customary practices for land ownership and inheritance discriminate against women and the lack of defined women's rights to land under communal ownership mean that women are not consulted in management, purchase or selling of land. Women are also not sufficiently represented in institutions that deal with land and the international conventions dealing with women's rights have not been translated into law or national policies. Violent conflict relating to land is not uncommon, but conflicts and competition over land also extend to between line ministries, local authorities and chiefdom institutions.

6. About 59.7 per cent of rural households in Sierra Leone are food insecure, compared with 25.1 per cent in urban areas. Expenditure on food for the rural household averages 63 per cent of total household expenditures. Food insecurity is highest in households living in livelihood zones dominated by food crop production. A 2016 survey (table 1) indicates that only an average of 43.5 per cent of the households in the country had some food stocks. Food insecurity is more visible in households headed by women, and during the leanest months of August to October, rural married women bear the brunt of caring for the home when the husbands migrate to the diamond mines in search of employment. Two staple crops, rice and cassava, along with oil palm account for 60 per cent of the diet. Domestic rice production (801,000 MT) is below domestic consumption resulting in an annual rice importation (280,000 MT) at about US$ 110 million. Acute malnutrition prevalence is about 4.7 per cent, with most districts going far beyond this figure, apart from the Western Area Urban and Western Area Rural districts.

Table 1 : Households with stocks of food (2016)

District	Per cent households
Kailahun	40.9
Kenema	40.5
Kono	84.2
Bombali	22.3
Kambia	50.0
Koinadugu	40.7
Port Loko	30.7
Tonkolili	59.9
Bo	47.0
Bonthe	4.4
Moyamba	53.4
Pujehun	45.1
Western Area Rural	43.3
Total	**43.5**

1.3. Natural Resource Management (NRM)

7. Biodiversity loss is one of the major problems undermining sustainable development in Sierra Leone. Total forest cover in Sierra Leone amounts to 38% of total land area although only 5% is original forest cover. Deforestation between 1990 and 2010 has been at a rate of 20,000ha per year. Agriculture comprises 59% of GDP (World Bank, 2017) and sustainable management of biodiversity has important implications for food security and poverty reduction. The main direct causes of land degradation in Sierra Leone are logging, firewood collection, mining, charcoal production, tree crop plantation, settlement expansion and the slash and burn practice used in shifting cultivation. The primary indirect causes are extreme poverty, corruption, low public awareness and weak institutions.

8. Forestry protection in Sierra Leone is very weak and facing constant threats posed by corruption, weak governance structures both at the legislative level as well as on the ground monitoring and sanctioning of illegal logging and general lack of awareness among farmers. MAFFS reported during the formulation mission, that protected areas and the 1km buffers are under constant threat from slash and burn practices and plantations. Slash and burn is a standard practice carried out by extremely poor farmers to clear land typically around 2ha for the cultivation of rice, vegetables, and the production of firewood and charcoal.

1.4. Climate change

1.4.1. Current climate hazards and variability and their impacts

9. Sierra Leone is one of the most vulnerable countries to climate change in West Africa and among the Least Developed Countries (LDC), least able to adapt to the adverse effects of climate change[1].According to the Sierra Leone's Second National Communication to the UNFCCC, climate change will lead to severe consequences including: decreased agricultural productivity, degradation of the coastline and damage to coastal structures, a shift from tropical rain forest to dry forest, food and nutrition insecurity, water stress and severe economic impacts that will undermine decades of development gains (Sierra Leone Climate Action Report, 2015).

[1] Maplecroft, 2017, Climate Change Vulnerability Index 2017

10. Farmers' high dependence on rain-fed agriculture and natural resource-based livelihoods are key influencing factors of their vulnerability. However, while unaware of the meaning of climate change, farmers have already consciously started to adapt their farming practices to changing climate patterns. Farmers have reported experiencing changes in rainfall patterns characterized by rainfall in the dry season and dry periods in the rainy season. Climatic changes have manifested in more intense rainfall patterns with more frequent severe floods and seasonal droughts, late onset of rains, rising temperatures, particularly in the dry season, stronger winds including reports of local tornadoes, more intense thunderstorms and more frequent landslides. The IPCC predicts that without adaptation, tropical regions will experience negative impacts in the production of wheat, rice and maize due to temperature increases. Agriculture is Sierra Leone's second largest economic sector after mining contributing 59% to the GDP and is therefore facing long-term, high-risk exposure to climate change.

11. The seasonal rainfall in West Africa varies considerably on inter-annual and inter-decadal timescales, due in part to variations in the movements and intensity of the Inter Tropical Climatic Zone (ITCZ). Precipitation patterns in the Sierra Leone are affected by a large decadal variability, with decades showing above average and below average levels compared to the historical mean. For example, the period around the 1980s was characterized by below average precipitation levels, while the 1970s and 1990s were on average wetter than during the period (**Error! Reference source not found.**).

1.4.2. Anticipated climate change and its impacts

12. Climate change is projected to change precipitation and temperature patterns. Using an ensemble of GCMs from the CMIP3 database, McSweeney et al., (2010) project an increase in annual precipitation over the period between 2010 and 2050 in all warming scenarios studied (A2, B1 and A1B). However, even though precipitation are projected to increase the inter-annual variability is also significantly increasing, particularly in the A2 scenario (the global mean temperature increase in the A2 scenario is comparable to the warming in the RCP8.5 scenario) in comparison to the B1 scenario (which is itself comparable to the RCP2.6 scenario, leading to about 1.6 degrees of warming by the end of the century) (Sylla, Nikiema, et al., 2016). The intra-annual variability of precipitation in Sierra Leone is also projected to increase, with an increase from 5 to 10 percent of precipitation in the wet season (May-September) in the 2036-2065 period in both RCP4.5 and RCP8.5 scenarios (Sylla, Nikiema, et al., 2016). Even though precipitation is projected to increase in the May to September season, the length of the dry spells could also increase by up to 15 percent compared to the historical period, in the 2036-2065 period – primarily in the RCP4.5 scenario. Finally, heavy precipitation events could also significantly increase over Sierra Leone, particularly in the Northern part of the country, with possible increase up to 15 percent in the intensity of the extreme rainfall events (Sylla, Nikiema, et al., 2016) in the 2036-2065 period in both scenarios. This trend of increasing intensity of extreme rainfall further accentuates in the century.

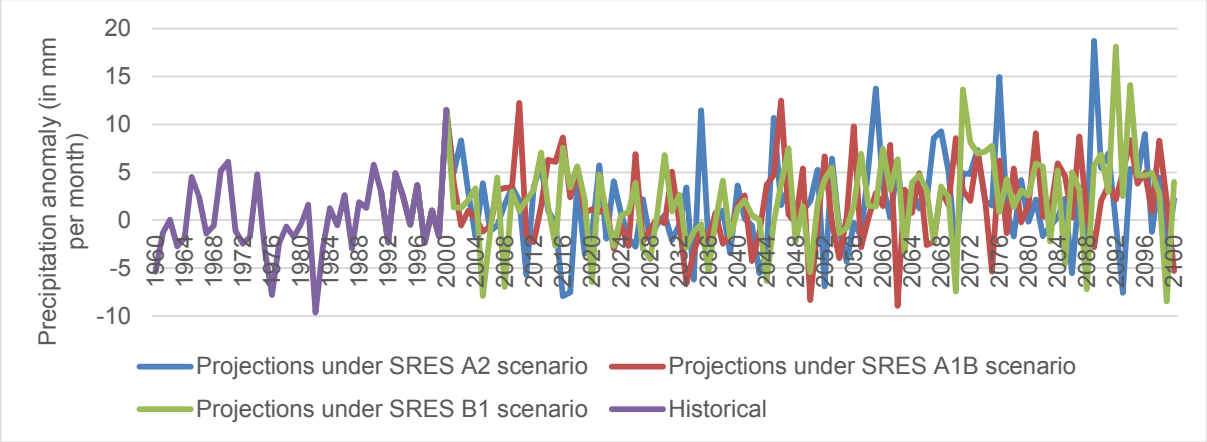


Figure 2 Precipitation anomaly to the mean in the period 1970-1999 expressed in mm per month for the historical (yellow), A2 scenario (dark blue), B1 scenario (grey) and A1B (orange). Source: McSweeney et al., (2010)

13. Temperature patterns are also projected to change as a consequence of climate change. Mean temperature increase for Sierra Leone could range from about 1.2 degrees to above 1.5 degrees by 2050, in the scenario B1 and A2 respectively. This increase in temperature is measured compared to the reference period 1970-1999 mean temperature over the country. The warming over the country is projected rather uniform even though the coastal zones could warm at a slower rate (about 1.1 degrees in the 2030s) than the interior of the country particularly in the North-eastern part (about 1.4 degrees). By the 2050s, the number of hot days per year and season could significantly increase as a consequence of climate change and in all warming scenarios. The largest increase in the number of hot days would be observed in the July, August and September months with an increase ranging from 60 percent (B1 scenario) and 80 percent (A2 scenario).

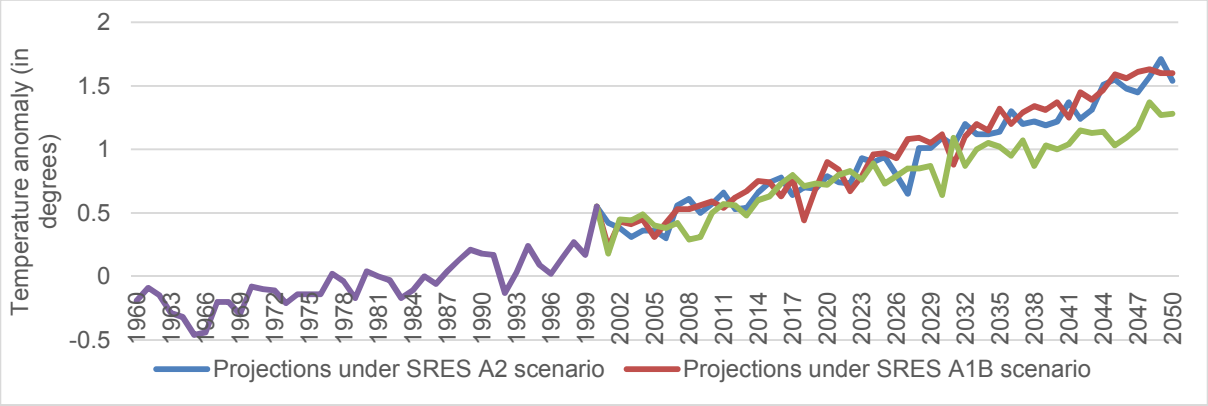


Figure 3 Temperature anomaly to the mean temperature in the period 1970-1999 expressed in degrees for the historical (yellow), A2 scenario (dark blue), B1 scenario (grey) and A1B scenario (orange). Source: McSweeney et al., (2010)

14. As a consequence of the changing precipitation and temperature patterns, the main climates of Sierra Leone are projected to progressively shift throughout the 21st century. As of the current period, Sierra Leona has two dominating climate, following the Koppen classification: a tropical monsoon climate at the exception of the northern part of the territory characterized by a tropical wet climate. According to Sylla, Elguindi, et al., (2016), the monsoon climate (hot wet in the figure below) could progressively reduce its geographical extent to the Southern coastal zone being replaced by the tropical wet (hot moist in the figure below) climate prevailing in the North-eastern part of the country. The figure below (**Error! Reference source not found.**) shows this progressive shift in climates in Sierra Leona compared to current days in the RCP4.5 and RCP8.5 scenarios.

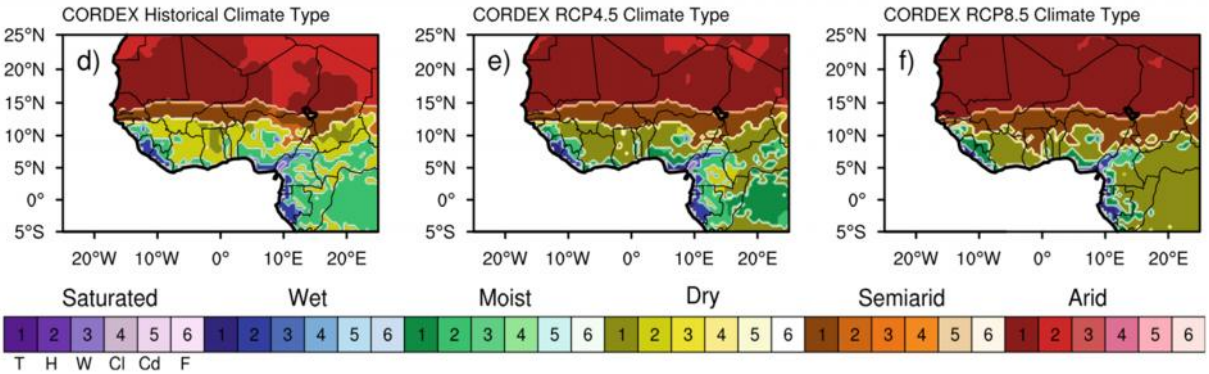


Figure 4 Distribution of climate types for reference period (1985–2004; left panel), future RCP4.5 (2080–2099; middle panel) and RCP8.5 (2080–2099; right panel) for CORDEX (d, e and f) ensemble using all models. Abbreviations definition: T Torrid, H Hot, W Warm, Cl Cool, Cd cold, F Frigid. Source: Sylla et al., 2016)

15. Agricultural value-added still represents the largest share of Sierra Leone's GDP. Cocoa is one of the main export and cash crop of the country, with exports on 2017 amounting to US$ 72.3 million which was the fourth largest export behind Iron Ore ($209M), Titanium Ore ($141M), Diamonds ($104M). In volume of production, this was the equivalent of 12.5 metric tons. The future consequences of the changing precipitation and temperature patterns could significantly affect the production of the subsector. The International Center for Tropical Agriculture (CIAT) projects a reduction in climate suitability for cocoa production by up to 20% in the southern districts and up to 40% in the north-eastern upland districts by the 2050s (**Error! Reference source not found.**). As a consequence of this risk on cocoa production to changing temperature and precipitation patterns investments in the subsector could face productivity challenges, particularly in the context of IFAD baseline investment.

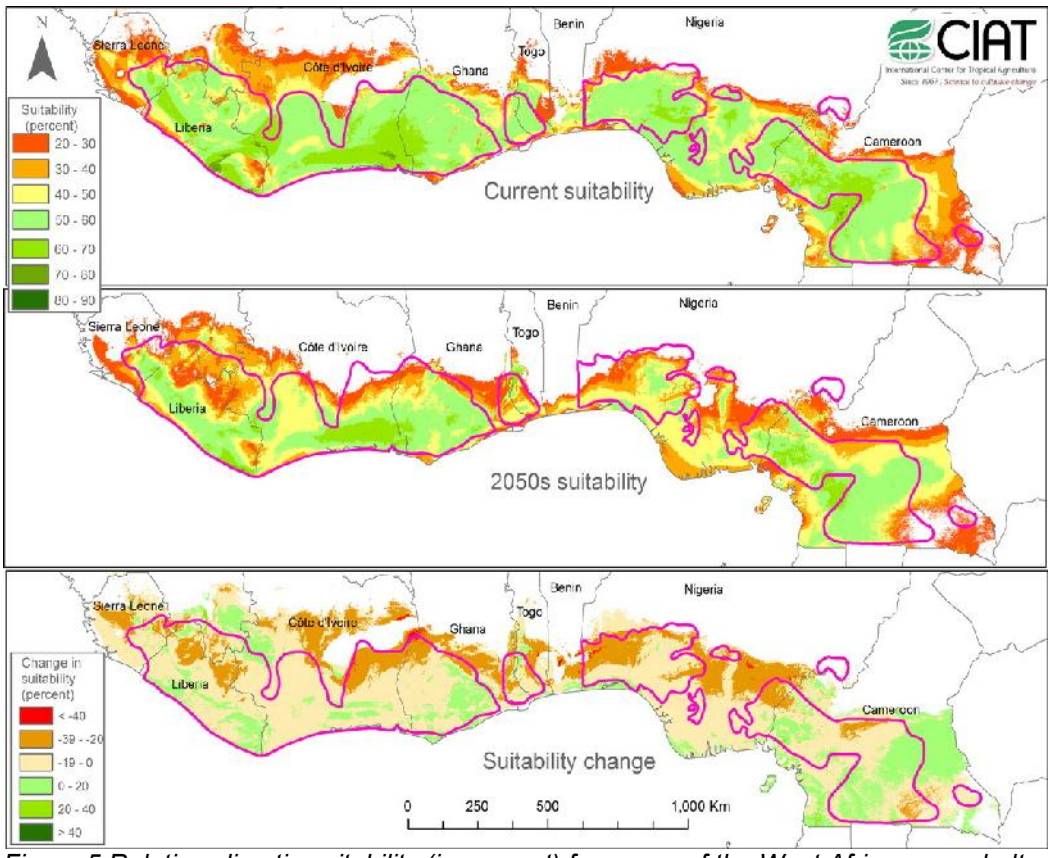


Figure 5 Relative climatic suitability (in percent) for cocoa of the West Africa cocoa belt under current and projected 2050s climate conditions, as well as suitability change, according to the Maxent model based on 24 climate variables.

16. Detailed projections on the effects of climate change on rice and cassava production in Sierra Leone are lacking. It is however possible to draw some possible implications for rice production on the basis of studies investigating the effects of climate change on other crops in Sierra Leone and rice production in the other countries of the region, which present similar climatic characteristics. A study on millet, sorghum and maize projects that by the 2050s, the yield of these crops could severely decrease as a consequence of climate change. While maize currently yields about 700kg per hectare (in the period 1980-1998), it could decrease between 300 and 600kg per hectare in the 2050s in the high warming scenario (RCP8.5). Sorghum is projected to follow a similar downward trend from about 1000kg per hectare to yield ranging from 500 to 900kg per hectare in the same scenario and time period. Finally, Millet is even more vulnerable to future climate change with a potential decrease from 900kg per hectare to as little as 400kg (Ahmed et al., 2015).
17. Only limited evidence for rice is available, primarily investigating the region as whole. In Western Africa, irrigated rice yield could decrease between 21 and 45 percent in the 2050s in the high

warming scenario (RCP8.5) compared to the 2000s; for rain-fed rice, with already lower yields than irrigated rice, the decrease could range from -22 to -18 percent – both in the absence of adaptation. With the implementation of adaptation options, such as rice varieties able to withstand heat, the region could see both irrigated and rain-fed rice increase their productivity from 4 percent (rain-fed, upland rice) to 7 percent (irrigated) (Oort & Zwart, 2017).

18. Hitherto, Cassava production and the impacts of climate change have benefited from a limited amount of studies, despite its importance in the food system in Sierra Leone and African countries. In Sub-Saharan Africa, cassava yield could decrease from -5 to -15 percent by the 2050s compared to yields in the 1961-2000 period in a high-warming scenario (SRES A1B)(Schlenker & Lobell, 2010).
19. In the absence of adequate climate change adaptation options, both Sierra Leone's staples could be severely affected by future climate change, limiting population's self-sufficiency, which would therefore need to rely on other crops and exported commodities. Furthermore, cocoa production, the main source of income in rural areas, could also be reduced as a consequence of decrease climatic suitability. Decreasing food supply and possibly reduced income from cocoa production could limit the ability of rural and urban households to attain food and nutrition security.
20. Left unchecked, climate change could have detrimental economic development consequences. Under both a low and a high warming scenario, climate variability and change could lead to decreasing GDP per capita compared to a scenario without climate change. The decrease could be up to -5% in 2030 and growing up to -20% by 2050. The below figure presents GDP per capita risk for Sierra Leona in both low (RCP2.6) and high (RCP8.5) scenarios.

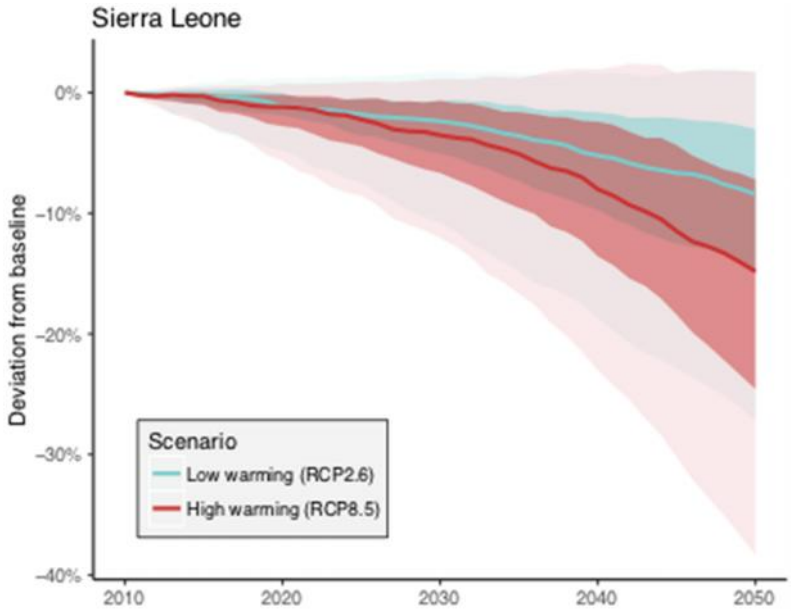


Figure 6 Risks to GDP per capita in the low and high warming scenarios. Source: Baarsch et al, in press.

21. Food security is composed of four distinct components: availability, access, utilization and stability. In Sierra Leone, and particularly in the regions where IFAD's interventions are planned, all four dimensions of food security are threatened. Availability, through production, could be decreased as a consequence of increased temperature and more frequent precipitation extremes. The projected increase in dry spells could also lead to reduced availability of water for irrigation during the dry months of the year. Access could also be limited as smallholders could see their incomes from cocoa production decreasing as a consequence of the decreased cocoa suitability. Access could also be threatened by the projected higher frequency of heavy precipitation events, which could further disrupt road connection. Finally, as a consequence of changing patterns and more frequent extreme events, the overall stability of production and external supply, as well as incomes from agricultural activities could be reduced by future climate change. Key issues identified and addressed by the project, root causes, barriers and preferred solutions

The project seeks to address the vulnerability of the cocoa and rice sector to climate change and climate variability in order to sustain continued and increased agricultural productivity and growth for poverty reduction in Sierra Leone. It addresses the multiple and combined impacts of climate change especially the anticipated modification of rainfall patterns and decreased water availability and increases in temperatures.

22. The project intends to address six key issues identified which are already impacting the productivity of both cocoa and rice sector in the context of climate change:

- The decreasing climatic suitability for cocoa production, which could lead to reduced incomes and in some cases the reduced ability of smallholder farmers to access food on the local market.
- The increased frequency of heat waves as well as the extension of dry spells could also lead to a reduction in the production of subsistence crops, particularly rice and to some extent cassava.
- The increased frequency of extreme precipitation events could lead an increased disruption of market services and infrastructures such as roads and water services.
- Combined, these key issues could lead to an increase in poverty, particularly for transient poor and therefore an increased vulnerability to future climate change impacts in smallholder farmers' households.
- Women make up 70 percent of agricultural business in Sierra Leone but realize little or no benefit.
- Degradation of natural resources as a result of unsustainable agricultural practices (slash and burn, firewood collection, logging) and recent conflict and Ebola crisis.

23. The project intends to address the underlying constraints that further exacerbate the projected climate change impacts and that represent major barriers to adaptation and resilience in the cocoa and rice sector. Amongst the key constraints: Unsustainable or inadequate agricultural practices (e.g traditional slash and burn land preparation, land preparation for rice cultivation, inefficient use of water, erosion, diseases of cocoa trees due to increased temperatures. In addition, absence or inadequate of infrastructures to withstand to climate change impacts. Deforestation and land clearing in the cocoa plantations is also a key problem and is a result of growing energy needs, with fuelwood (and charcoal). The direct consequence is the country is losing hectares of lands of top soil due to deforestation and old cocoa trees affected by diseases.

24. These barriers are preventing the country from achieving optimal yield in the cocoa and rice sector, to generate surpluses to respond to food security and nutrition while improving household incomes. As a post conflict countries, the country needs to upgrade its infrastructure including earth dams, adapted storages and warehouses, climate resilient roads along the agricultural value chain , improve capacity of small holder farmers to access to climate knowledge at technical information in order to shift from inadapted and in many ways unsustainable cultivation methods (e.g slash and burn) that provide short term gains but deplete soil fertility and degrade the natural capital and environment. Low yields prevent farmers to generate surpluses and income to be able to acquire inputs such as drought resilient seeds or improved fertilizers. As climate risks and climate risks management is new, it was proven by previous IFAD projects that well targeted support to smallholder farmers leads to increase yields in therice and cocoa sector. For instance, smallholder farmers supported by an IFAD climate focused project have double and triple cropping of rice using NERICA rice over the paddy varieties as a result of the earth dams. However, more effort needs to be done to help farmers have access to timely and relevant agro meteorological information to better decide on cultivation practices and cropping calendars. Early warning systems are no well in place yet. Accelerated erosion and siltation of drainage, irrigation systems could lead to a very heavy dire situation in rice producing areas where flooding is an issue.

1.5. Lessons learnt from the IFAD past projects on climate resilience in the agricultural sector

25. IFAD's experience in Sierra Leone offers the following results and lessons that will inform the design of this climate resilient development project which will scale up and replicate many activities of the

Rehabilitation and Community-Based Poverty Reduction Project (RCPRP) and the GEF grant -funded component. This project will also take advantage of the new IFAD baseline investment under formulation on cocoa to enhance or develop the climate resilience of the entire value chain (supply, production, processing, marketing) building on lessons learnt.

26. The GEF grant -funded overall project goal was to reduce the vulnerability of the food supply system to the negative impacts of climate change. The key outputs of the GEF/LDCF intervention under the three components are:

- **Sustainable development of climate resilient inland valley swamp**. A vulnerability mapping assessment was undertaken across the project districts in a participatory manner with local communities and fed into the overall project M&E system. The assessment identified 6,413 vulnerable swamps across the four districts totalling 72,649.04 ha. This assessment has been used during the design of this project. 8 consultation sessions to raise awareness about climate change and to start discussions about adaptive measures were organised. Other achievement included one study tour, Support was given to at least 1,794 men, 1,078 women and 6,021 youth with climate resilient rice varieties. The GEF project procured 3.2 metric tons (mt) of New Africa Rice foundation seeds[2], which are reportedly higher yielding, and boast a 98% germination rate (NERICA L19 & L20[3]) with particular suitability to rain-fed upland ecosystems. The purchased rice was initially planted on 80ha of IVS and subsequently multiplied and redistributed to farmers in the four districts. Eight of the 16 originally foreseen MAFFS field extension staff were trained (2 in each district) to deal with adaptation to climate change. Training through 40 FFS, as demonstration sites were set up to train 1000 farmers.

- **Integrated water and natural resource management for adaptation.** Twenty-two out of the forty planned trainings through Village Development Committees (VDC) were carried out and covered the subjects of: climate change awareness raising, adaptation to changing rainfall patterns, and sensitization against the slash and burn practices. The pilot produced improvements of soil moisture for crops, the water levels went from lows of 38.75 to 70 mm/m to over 200 mm/m of soil depth. the research was replicated on 0.5 ha plots in 22 of the 24 planned locations across all project districts. In addition to the micro-catchments a total of 102 women, 276 men and 21 youths were also trained through 19 sessions, with the support of trained MAFFS facilitators. Other key achievements include: These include the establishment of fishponds in earth dams, the planting of economic tree crops (oil palm, moringa, cocoa and coffee plantations) in the fringes of the earth dams as well as food crops (groundnut, maize, banana, ginger, sweet potato, coco yam and vegetables). 8 planned community forestry plans were developed, but reports from MAFFS show that 14 community forestry plots were developed by extension workers through a Memorandum of Understanding (MoU) with MAFFS. A total of 200,000 seedlings were raised and the VDC visited by the TER mission demonstrated awareness on slash and burn practices and on the impact of climate change on their livelihoods. Two women groups were supported in the districts of Kenema and Koinadugu with one greenhouse each. Hand dug wells were built at each site, from which water was manually pumped into an overhead tank and distributed to nearby fields using drip irrigation, the manual pumps were deemed too labour intensive for the women and subsequently solar powered pumps were installed. The purchasing of small ruminants (50 cattle, 100 goats and 100 sheep) to support the former national artificial insemination hub was not possible due to the slow completion of the paddock system. The construction of the dams enabled the double cropping of rice in larger areas of usually rain fed swamps than was possible before. The earth dams, designed to hold around 22,000 m^3 of water, were initially a LDCF/GEF component however while still funded by the IACCAPFS.

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2 Foundation seeds are seed stocks multiplied by or under the supervision of a public agency for use in the production of registered and certified seed.

3 Disaggregated amounts of L19 and L20 NERICA rice purchased could not be determined.

- **Capacity building and awareness raising on climate change.** Of all the 11 synoptic weather stations existing in the country all but 4 were either totally or partially destroyed and were operational during the design stage but below standard in terms of observation instruments, manpower and technical capacity. project supported capacity building within the Meteorological Department through the training of 6 technicians on agro-climatology and management of weather stations. The project had planned for 15 weather stations to be put in place, however the costs involved were significantly underestimated and after attempts to procure stations from the UK. Twenty rain gauges and Stevenson Screens were hence installed in schools across the four districts. Stevenson Screens are shelters or enclosures made to shield meteorological instruments against precipitation and direct heat radiation from outside sources
- **Gender Action Learning System (GALS).** was therefore also integrated into the Climate Change activities and 180 women, youths and heads of vulnerable households had benefitted personally from the awareness raising activities on climate change, the hope is that they also spread this knowledge. Twelve radio stations were identified and received training on climate change. The musical and visual tools did not target the 40 planned schools, but 'jingles' (songs/adverts), and an eight-episode radio theatrical programme, extolling the benefits of IVS cultivation as well as educating about climate change and against the practice of slash and burn, were developed and regularly broadcast in all the districts. The radio stations were each further supported with 20 solar panels and a 12-battery pack as well as 7.4 KW generators, controllers, an inverter and motorbikes to maximise their climate change training with community awareness activities.

27. In summary of these lessons are:

28. **Income Generation:** The evaluation of the RCPRP indicated that the NERICA rice introduced as part of the climate adaptation strategy has had a positive impact on income generation. Research has shown that farmers have been able to double profit margins, which is very positive for prospects of future sustainability. Reports have also been received of double and triple cropping of rice as a result of the earth dams but it was not possible to quantify this in numerical terms or to what degree they improved the yields of the NERICA rice over the paddy rice varieties (IFAD, GEF evaluation report, Sierra Leonne).

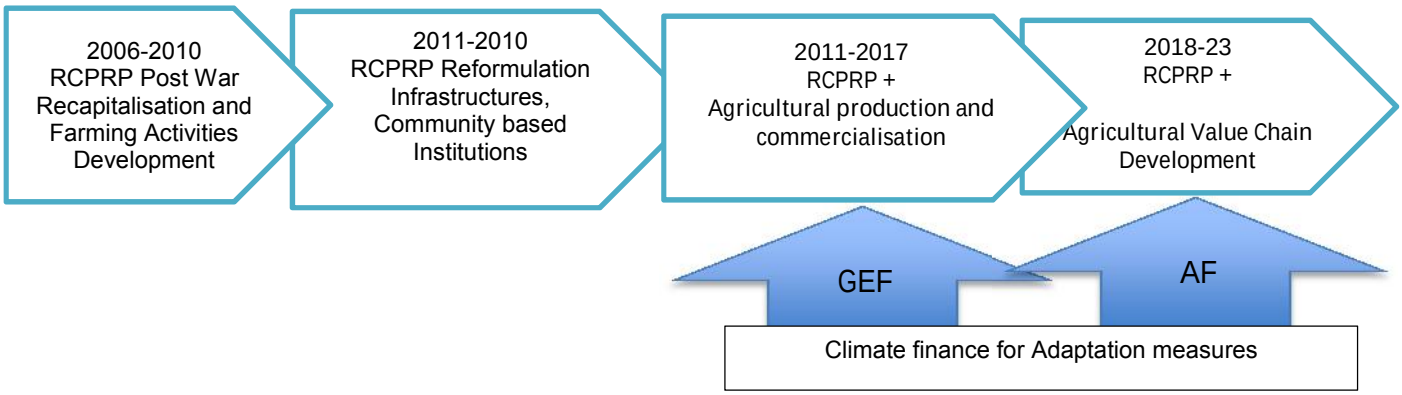
29. **Institutions and policies:** The project carryout capacity building exercises directly impacting MAFFS by the training of 12 staff members in statistics and applied climatology. The project also directly assisted the Meteorological Department in developing the network of AWS's as well as in developing its technical capacity, both of which are central to a nation's ability to adapt to climate shocks and were seriously impaired as a result of the war. Eight stations were installed throughout the four regions (two per region) Three staff members were trained at the Nigerian Meteorological Agency in a year-long course both as senior and medium level meteorological technicians. The overall objective however to gather and disseminate meteorological data to enable farmers better adapt to climate shocks, has not yet been achieved and a number of technical and financial sustainability challenges remain with regards to the Meteorological Department's ability to carry on after project closure

30. **Climate change Adaptation:** RCPRP+ and IACCAPFS (GEF component) carried out a number of activities specifically aimed at reducing climate shocks, these include a climate vulnerability mapping exercise and subsequent construction of earth dams to enable a perennial supply of water in climate change vulnerable, non-perennial rain-fed swamps. 3.2 metric tons of NERICA rice suited to rain-fed upland ecosystems were also procured, and multiplied to an estimated 72mt. This was then re-distributed to farmers on a total of 120 ha and is expected to greatly improve food security as beneficiaries are able to double and triple crop rice. The project also piloted innovative sustainable land and water harvesting techniques to collect, concentrate and store water at the crop root zones (tied ridging, moon ridges) as well as soil conservation methods that control erosion (mulching, terracing). This innovative pilot aimed to demonstrate that in-situ agriculture can be more productive than the destructive practice of slash and burn, and has been largely accepted. The project also demonstrated great signs of soil regeneration in soil structure, nutrient and moisture content and the

university is set to continue the activities after project completion. 180 women, youth and vulnerable households attended workshops on climate change adaptation; training on how to carry out capacity building workshops on climate change adaptation was also delivered.

31. **Capacity Building:** The capacity building activities targeted the meteorological services by re-establishing weather stations, and providing climate data to support decision-making processes at all levels. The ability of the Meteorological Department to fulfil its mandate and related weather monitoring tasks, data collection, data analysis, dissemination to end-users and storage was greatly affected by the ten-year war (1992-2002). Some staff members died while others retired from service and others left the country. The effective adoption and design of climate adaptation responses are dependent on coherent national weather data and natural disasters records. The GEF/LDCF activities aimed to address the identified capacity building and weather data collection gaps at national and institutional level by investing in both human resources and equipment. However, further capacity building exercises are likely to consolidate the results gained from past projects.

32. **Scaling up:** This project will scale up and amplify the results obtained by RCPRP+ and IACCAPFS putting mechanisms, methodologies and the necessary resources in place to disseminate and scale up successful experiences on climate resilient agriculture for food security and nutrition. This an integrated approach where the IFAD past experiences and baseline investments serve as entry point and lessons learnt for this additional climate financing on larger beneficiaries.



2. PROJECT / PROGRAMME OBJECTIVES

33. Climate change and climate variability is expected to affect rainfall patterns, temperatures and to decrease water availability. Adaptation measures must address key challenges posed by climate change. The project will address key climate vulnerabilities in agriculture and water resources management in the rice and cocoa value chain, and hence contribute to immediate and longer-term development and resilience needs of poor vulnerable smallholder farmers in Sierra Leone. The resilience of the cocoa and rice sector can only be achieved by identifying and implementing a comprehensive set of agricultural practices and agricultural diversification strategy through integrated farming systems designed to increase yields, minimize environmental degradation while maintaining the ecological functions and the rice and cocoa production value chains.

34. The current project proposal will follow the existing intervention framework closely, putting emphasis on scaling-up IFAD successful initiatives and capacity building in Sierra Leone. The general objective of this project is to strengthen the resilience of the GoSL development investments on cocoa and rice sector. This AF project is complementary to other IFAD investments on food security and livelihood opportunities, which are being supported by the IFAD-funded Agricultural Value Chain Development Project (AVDP) with adaptation to climate change. The AVDP was approved by IFAD's Executive Board in December 2018, and builds on past IFAD and GEF financed projects in the country such as the Rehabilitation and Community-Based Poverty Reduction Project (RCPRP). IFAD investment has benefited 1.1 million people (Final Evaluation of the RCPRP). Adaptation interventions proposed for funding from the Adaptation Fund are fully aligned with the AVDP and build on past IFAD investments baselines.

35. The project intends to provide Integrated solutions to the key issues from climate change in Lofa County, the breadbasket of the country by testing integrated climate resilient rice and cocoa in partnership with all actors sitting along the value chain. This approach will draw from existing technologies (varieties, cropping systems) as well the integration of new dimensions climate change resilience on rice and cocoa value chains. The model includes: environmental management, integrated farming systems and diversification, integrated pest management and water management, climate proofing infrastructures to access to markets and reduce post-harvest losses.

36. Targeted people are smallholder farmers and communities that are the most vulnerable to climate change. The direct beneficiaries of the project are 35,000 smallholder farmers and 10,000 rice producers, 5,000 cocoa producers, of which at least 40 percent will be women and 40% young people. To benefit from project services, farmers must be active, resident smallholder farmers in the project locality, already engaged in producing one of the target crops, and must be a member of an FBO (or willing to join one).

37. The project will also promote policy dialogue on potential maladaptation and policy gap in both sector, in the view of achieving strong policy on rice and cocoa sector and to be replicated in the whole country and the West Africa region.

38. The overall objective of this additional climate finance for adaptation is to reduce vulnerability and increase adaptive capacity to respond to the impacts of climate change, including variability at local and national levels as well as on natural resources critical for sustaining agricultural production and increasing food security and nutrition of vulnerable poor communities.

39. The AVDP focuses on three value chains, i.e.: (i) Cocoa, (ii) Nerica Rice, and Paddy rice. Additionally, the project aims at improving the organisation and performance of the selected value chains, which include the resilience of rural infrastructure to climate change impacts such as feeder road rehabilitation to connect producers to markets. Climate change could reduce crop yield especially rice and cocoa and disrupt connexions to markets.

40. Greenhouse gas (GHG) emissions are projected to increase to about 6.6 MtCO2eq in 2030. The major greenhouse gas emitted is Methane (CH4) with projected emissions of 3.7 MtCO2eq in 2015 and about 5.0 MtCO2eq in 2030 and the largest emitting sectors are Agriculture and Waste.

41. Reflecting the key development challenges and adaptation needs while being fully aligned with the three components of the AVDP, the project will deliver the stated objective through three components:

    - **Component 1:** Climate-proofed agricultural production and post-harvest combined with livelihood diversification
    - **Component 2:** Climate-resilient rural transportation and water infrastructure
    - **Component 3:** Institutional capacity building and policy engagement

3. PROJECT / PROGRAMME COMPONENTS AND FINANCING

Table 2: Project Components and Financing

AVDP components	CRDP Components	Expected concrete outputs	Expected outcome	Amount
Component 1: Climate Resilient and Smart Agricultural Production	**Component 1:** Climate-proofed agricultural production and post-harvest combined with livelihood diversification	Output 1.1. Best available technologies and integrated resilient rice and cocoa foster the resilience of cocoa and rice production and post-harvest are implemented:	1.1. Set of proven best practices on climate resilient rice and cocoa value chain drawing from local and	US$ 5,967,179

		- Cropping calendar and climate early warning systems; - Vulnerability and crop modelling; - Climate resilient varieties, multiplication and dissemination, - Integrated pest management, soil management, - Energy for production and post-harvest and processing, water pumping, Reforestation and agro forestry	international research and sustainable increase in rice and cocoa production	
		Output 1.2. Income-generating activities (fish farming, business model on integrated community garden with solar water pumps, compost systems, processing units, transport system tricycles) are promoted as livelihood diversification measures	1.2. Adaptation strategy of smallholder farmers improved because of diversified livelihood strategy	US$ 414,761
Component 2: Agricultural Market Development	**Component 2:** Climate resilient rural infrastructure	Output 2.1. Rural transportation and storage infrastructures have been rehabilitated and upgraded to withstand weather extremes (climate resilient feeder roads, drainages systems, culverts; climate proofed storage and warehouses, equipment and processing units, post-harvest storage facilities with phytosanitary control and serving as integrated trading and markets points)	2. Enhanced and secure access to potable water supply, post-harvest losses reduced and improved access to market by beneficiary communities through climate-proofed rural road network	US$ 758,014
		Output 2.2: Water supply increased and sanitation infrastructure built, accounting for current and future climate risks (watershed rehabilitation, water efficiency and management, training and extension and infrastructure rehabilitation and		US$ 841,268

		construction – irrigation systems boreholes, water quality assessment, toilets, sanitation and drainage systems)		
Component 3: Project Coordination and Management	**Component 3:** Institutional capacity building and policy engagement	Output 3.1. Capacity of the government (esp. EPA) in managing climate risk is strengthened	3. Environment for resilient rice and cocoa value chain improved as EPA and the government capacities enhancement on adaptation to climate change in these sectors	US$ 625,969
		Output 3.2: Activities are adequately coordinated, monitored and evaluated.		US$ 350,632
Project execution cost (2%)				US$ 182,200
Total Project/Programme Cost				US$ 9,140,023
Project Cycle Management Fees (8.5%)				US$ 776,902
Amount of Financing Requested				**US$ 9,916,925**

Table 3. Project Cycle management fee charged by the Implementing Entity (8.5%).

Project Cycle Management Fee over 6 years	**Percentage**	**Amount**
1. Development and Preparation	20%	$ 155,380.40
2. Overall Coordination and Management	30%	$ 233,070.60
3. Financial Management and Legal Support	20%	$ 155,380.40
4. Evaluation and Knowledge Management Support including Reporting, Mid-term Evaluation and Terminal Evaluation costs	20%	$ 155,380.40
5. Overall Administration and Support Costs, including audit	10%	$ 77,690.20
Total	**100%**	**$ 776,902.00**

4. PROJECTED CALENDAR

Milestones	**Expected Dates**
Start of Project Implementation	2019
Mid-term Review	2022
Project Closing	2025
Terminal Evaluation	2025

PART II: PROJECT / PROGRAMME JUSTIFICATION

A. Describe the project / programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience

42. The project proposes the implementation of a set of concrete adaptation options in tow targeted and profitable agricultural sector (rice and cocoa). A set of enabling actions designed to strengthen national capacities and institutions is interlinked to the concrete adaptation measures which will lead to building the resilience of the cocoa and rice value chains in the most vulnerable areas to climate change in Sierra Leone. Concrete adaptation measures are direct application of integrated climate resilient production, post-harvest and marketing systems. New technologies and best knowledge aim at promoting the paradigm shift and behavioural change in the rice and cocoa production and linkages to markets.

43. To project is structured around three components:

- Component 1: Climate-proofed agricultural production and post-harvest combined with livelihood diversification;
- Component 2: Climate resilient rural infrastructures; and
- Component 3: Institutional capacity building and policy engagement

44. Each component is described in more details below.

Component 1: Climate-proofed agricultural production and post-harvest combined with livelihood diversification.

45. This component focuses on household-/village-level interventions in climate resilient and sustainable agriculture in order to reduce the negative impacts from climate change and climate variability, as well as to contribute to agricultural and rural livelihood development through income diversification. Along the agricultural value chain, key vulnerability issues which call for adaptation practices are the low productivity and high vulnerability of the agricultural sector mainly cocoa and rice highly dependent on rainwater, which is the sole water source for a large majority of small farms; the increased recurrence of extreme weather events such as floods, droughts and climate-induced vegetable diseases, which reduce productivity levels; and changes and variations in climate conditions from one year to another. With regards to post harvesting in the cocoa sector, the lack of adequate equipment for drying and processing to maintain a high-quality product of outputs is still a challenge to stabilize and increase farmers' income in the face of climate change. To support the shift towards climate-resilient production and post-harvest systems combined with livelihood diversification in the targeted areas, the project will focus on the following outputs and activities

Output 1.1: Adaptation measures to foster the resilience of cocoa and rice production and post-harvest are implemented

Cocoa value Chain:

- Establishment of cocoa clonal garden at SLARI to facilitate the introduction of drought- and temperature-resistant cocoa seedlings; including resistance to emerging pests and extreme events.
- Best reforestation and agro forestry techniques
- Support to cocoa clonal garden operation. This activity will ensure the long-term functioning of the clonal garden and will also support the establishment of a sustainable business model;
- Development of cocoa farms, which include resilient practices such as vulnerability-informed land use, tree shading and agroforestry.

- Climate weather information's to local cocoa producers specifically for droughts, floods and humidity
- Improvement on crop modelling and assessment of climate vulnerability
- Use of modern technologies with a particular focus on solar based pumping systems, solar based post-harvest and processing and equipment to attract more youth in agriculture

46. Under this output, the project will engage with national and Western African expertise on cocoa production, the national expertise of the Sierra Leone Agricultural Research Institute (SLARI) at the Kenema Crop Resource Centre (KFTCRC), and at the regional level, the Ghana Cocoa Board (Cocobod) and the Cocoa Research Institute of Ghana (CRIG).

Rice value Chain:

- Selection of pest resistant varieties and cultural practices (distance between plants, irrigation management, and weeding
- Support to MAF to run Farmer Field School and provide other technical support. The FFS will showcase specific approaches to facilitate the introduction and uptake of resilient practices for farmers in the cocoa and rice sectors.
- Bore holes irrigation schemes, to cope with the consequences of drought and heat extreme events, bore holes will be rehabilitated and irrigation schemes will be deployed. The increasing needs for irrigation induced by future climate change will be integrated in the design of the schemes.
- Development of new Inland Valley Swamps for rice production to increase the production of smallholder farmers and diversify and expand their revenue sources.
- Watershed rehabilitation, water efficiency and management,
- Training and extension and infrastructure rehabilitation and construction including drainage systems
- Water quality assessment, toilets, sanitation

Output 1.2. Income-generating activities (fish farming and gardening) are promoted as livelihood diversification measures

47. The Midterm review of the GEF project recommended using the earth dam reservoirs to develop fish farming activities as alternative adaptation measures. The contribution of fish farming to food and nutrition security in Sierra Leone has been underplayed due to its low priority in the food production systems, however FAO reports that it contributes significantly to national protein intake[4]. As a source of irrigation water, pond water is also richer in nutrients than well water as it contains nitrogen-fixing algae, which improve soil fertility[5].

48. With regard to this output, the actions to be taken include:

- Construction of 30 earth dams for fish farming activities.
- Establishment of fish farms, including the creation of value-chain services (fingerling, etc.).
- Establishment of 100 Community model of integrated vegetable garden of at least 4-5 ha (solar pumps, compost systems, day care facility for women, agro forestry and rotation of crops; transport systems)

49. As a new activity still under development in the country, technical services for the stocking and management of the earth dams and fish farming activities will be provisioned throughout the project. Trained personal will be trained and placed in support to MAFFS regional extensions (depending on the number of communities practising fish farming). The targets are the Farmer-based organizations and directly the smallholder farmers engaging in fish farming.

50. With fingerling production centres in Bo and Makali, the project will work in collaboration with MAFFS, FAO and the Ministry of Fisheries and Marine Resources. Service providers, MAFFS and FAO will support to train farmers through the FFS in fish farming.

[4] http://www.fao.org/fishery/countrysector/naso_sierraleone/en
[5] http://www.fao.org/docrep/003/x7156e/x7156e03.htm

51. In addition to fish farming, the project will support the establishment of integrated resilient kitchen and community gardens powered by solar applied on integrated resilient farming systems with alternance of climate resilient crops, with high nutritional values.

Component 2: Climate resilient rural infrastructure

Output 2.1 – Rural transportation and storage infrastructure have been rehabilitated and upgraded to withstand weather extremes

52. Fostering productivity and production is not sufficient to ensure that smallholder farmers sustain and increase their revenues. Poor road and transportation infrastructure leads to a depreciation of the quality of the production and hence its value on the market therefore smallholders' revenues. The already observed and projected intensification of extreme weather events could lead to more value chain disruptions, affecting the capacity of smallholders to gain sufficient incomes from their production. As a consequence, two key actions will be undertaken by the project: (1) improving the usability of road infrastructure all-year round and for all-weather conditions; (2) in the same areas rehabilitating existing warehouses to withstand wetter climatic conditions will also support the development of the cocoa and rice value chains.

53. With regards to infrastructure, based on the lessons learned exercise from the RCPRP+, road construction has previously overlooked the construction of culverts that enable IVS drainage, resulting in water-logged fields during the rainy season. Depending on the ESIA outcome, this project will help finance culverts that will allow for natural drainage, and it will also support the EPA in its supervision functions. Should the allocated budget permit, the project will support the reinforcing of bridges against increased peak fluvial discharges resulting from increased deforestation, increased surface water runoff and increased rainfall intensity.

54. Activities under this output are:

- Warehouse rehabilitation to withstand wetter climatic conditions. With an increasing recurrence of extreme wet events, it is essential to ensure that existing warehouses (1) preserve low humidity level to preserve the produce and (2) are rehabilitated outside floodable areas and are not exposed to extreme flood events that could adversely affect the stored produce.
- Climate-proofing 120 feeder roads and farm tracks to ensure the year-round and all-weather usability. This includes the studies and surveys, the works, the construction of bridges and culverts where necessary, routine and periodic maintenance.
- To sustain the climate-proofed investment over a longer period of time, activities aiming at their maintenance by local public authorities and Farmer-based organizations will also include: (1) Support to districts for development of Feeder Roads Maintenance Plans and (2) Support to Farmer-based Organizations (Road gangs formation, distribution of maintenance tools, development of Farm Tracks Maintenance Plans)

Output 2.2 – Potable water supply increased and sanitation infrastructure built accounting for current and future climate risks

55. Agricultural and domestic water management in Sierra Leone is becoming more complex due to climate change. Key barriers to agriculture production involve drought (acute and seasonal) and flooding of villages and swamp rice and cocoa fields due to intense periods of rain. In the targeted areas, availability of water, in both quantity and quality, is being severely affected by climate variability and climate change. Constraints identified at the local level include lack of water infrastructure both for agriculture and human consumption. The low productivity in agriculture and livestock is linked to water availability. Addressing the risks of current and future climate change to water supply and agricultural productivity is therefore critical in enhancing resilience. Frequent drought or erratic rainfall results in crop damage, loss of livestock and pastures, water shortage (for humans and livestock), malnutrition (due to lack of food), and migration of households and wild animals. The unsustainable management of water resources is the major factors aggravating the impacts of climate change in the targeted areas. Crop pests and water-borne diseases are common, often caused by poor farm

management and the absence of water and sanitation infrastructures. Therefore, the following expected outputs are expected to improve the baseline scenario

56. Based on the lessons learned from the IACCAFPS IFAD/GEF pilot, control and management under climatic stresses remain a big challenge. Activities under this output will improve and upscale water harvesting small earth dams infrastructure with up to 40 new dams (from 4 under GEF) for perennial rice and vegetables in seasonal and climate vulnerable IVSs. The project will also tender a contract for a capable NGO or institution to carryout water quality testing as part of the site selection process to ensure the water is suitable for agriculture. As poor **sanitation** leads to water borne diseases, which are responsible for all deaths of the labour force, the project will also built latrines in the villages. Activities include:

    - Climate-proofed construction and rehabilitation of drinking water supply and sanitation to withstand the consequences of extreme dry and wet events that could disrupt the quantity and quality of water available to the population and its economic activities.
    - Capacity building for potable water management will complement the construction and rehabilitation.

Component 3: Institutional capacity development and policy engagement.

Output 3.1: Governmental capacities are strengthened for climate change adaptation .

57. Enabling the implementation of the project will necessitate to further develop the capacities of the relevant government agencies in charge of climate change adaptation from the policy to the implementation levels. The component 3 therefore focuses on strengthening the capacity of key government institutions (3.1) and ensuring the adequate M&E of the project combined with the recruitment and training of the relevant staff to facilitate the implementation of adaptation to climate change activities.

58. The original aim of this activity under the GEF/IACCPFS project, which was significantly hampered by the Ebola Virus Disease outbreak, was to develop the capacity of the Meteorological Department and the Environmental Protection Agency of Sierra Leone to facilitate the implementation of climate change adaptation. This support will consist in targeted capacity development for both institutions and the recruitment and training of key project staff to foster the quality and implementation of climate change adaptation.

59. The activities will consist in:

    - Strengthening of EPA's capacities and staff on climate change adaptation. This could include: Capacity building through technological enhancement, Training to enhance institutional capacity, Exchange visits for EPA staff. The detailed trainings will be decided in collaboration with the staff of the Meteorological Department at project start-up.
    - Strengthening of the Meteorological Department, including capacity building through technology enhancement and training to enhance institutional capacity. The detailed trainings will be decided in collaboration with the staff of the Meteorological Department at project start-up.
    - Technical Assistance for improved policy frameworks to mainstream climate risks in into sectoral strategies and policies.

Output 3.2 – Monitoring and Evaluation and Coordination of the Adaptation Activities

60. This final output intends to facilitate the monitoring and evaluation of the project as well as support the project team in accessing the necessary resources to plan and implement adaptation measures. This sub-component supports the critically underfunded Meteorological Department and Environmental Protection Agency, both institutions in charge of climate change adaptation. Under this output, activities to be undertaken are:

    - Support to the development of MRV system of climate response programmes.

- Support to the improved monitoring & evaluation and knowledge management activities, which will include: Additional baseline survey costs (related to climate change adaptation) and additional terminal survey costs (related to climate change adaptation).
- Project management and coordination, including the recruitment of Climate change adaptation specialist for the duration of the project and Staff training on adaptation-related issues.
- The project will leverage climate information's for cropping calendars from existing project that have supported the installation of rain gauges and automatic weather stations in the regions which are functioning.

B. Describe how the project / programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project / programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy of the Adaptation Fund

61. The main focus of this project is to build climate resilience and address the vulnerability of the cocoa and rice sector to climate change and climate variability in order to sustain continued and increased agricultural productivity and growth for poverty reduction in Sierra Leone. As stated above It addresses the multiple and combined impacts of climate change especially the anticipated modification of rainfall patterns and decreased water availability and increases in temperatures.
62. The project will contribute to Sierra Nationally Determined Contributions (NDCs) and for the country to fulfil its international commitment with the Paris Climate Agreement and the Sustainable Development Goals (SDGs) mainly the SDG1 (no poverty); SDG 2(zero hunger); SDG 13 (climate action). This project will contribute to IFAD's objectives on environment and climate as described in its Environment and Climate Strategy 2019-2025
63. The most vulnerable populations as determined by the IFAD targeting strategy have been targeted to receive significant economic and social benefits from this project. They will receive capacity building on the implementation of best climate resilience business models in rice and coca value chains and, climatic good and services. Good and services include: climate resilient infrastructures as described above (technologies, equipment's, climate proofed roads, storage and warehouses…).
64. Other socio economic benefits will come from the all activities related to resilient post-harvest with a potential side benefit of increasing both rice and cocoa yields, it is expected to have beneficial impacts on local food security and nutrition including through the creation of reserves in case of climate shocks. Sustainable land and water management techniques and sanitation facilities , along with water quality monitoring, are also expected to have benefits for local health, while the diversification and sustainable management of non-rice and cocoa crops, such fish farming and gardening will also have benefits on overall nutrition and improved income.

Environmental and social considerations.

65. The potential environmental are Increased technical data on climate and water projections, the maintenance of ecosystem services (soil fertility, nutrient cycling, carbon sinks, biodiversity, water), increase in water use efficiency through adapted and resilient rice and cocoa production. In cocoa plantations, the project will also contribute to reforestation, reductions of in the use of pesticides and fertilisers, leading to reduced water pollution. Sustainable Land and Water Management and ecosystem-based adaptation promoted through 32 targeted pilots demonstrating the benefits of in-situ climate smart agriculture. Climate smart agriculture techniques such as mulching, terracing, tied ridges, moon ridges and organic composting will improve soil fertility through reduced leaching, moisture and nutrient retention.
66. Other environmental benefits include: Nationwide climate risk mapping that will help in the identification of climate safer areas for cocoa production, SLARI staff will receive training in best

practices for climate change adaptation; Climate vulnerability and slash-and-burn mapping exercises will inform project site locations for cocoa plantations, climate-smart agriculture and earth dam locations. Farmers will receive training in correct fertiliser use to reduce unnecessary waste and indirect GHG emissions.

67. ESIAs will be carried out on the environmental impact of the feeder roads and the likely negative impact climate change will have. Depending on the result of the ESIA and available budget, culverts will be built and bridges reinforced against increased river erosion. The EPA will be invited to monitor ESIA compliance.

68. The project intends to build capacities of low and upland communities involved in rice and cocoa production and technical support delivered to participating farmers will percolate to other producers in the region, and that demonstrations of increased yields will help convince other farmers to adopt better technologies for the selected value chains.

69. Women and youth are key actors of the rice and cocoa value chain. Hence, the project targets the entire food production chain and as such, is expected to equally benefit men and women as vulnerable communities. A total of 34,000 households will be targeted by the project ,which. aims at reaching at least 40% women and 40% youth. The project will work with 10,000 rice farmers and 5000 cocoa producers.

70. Beyond the increase of yields and income, the project will help increase knowledge on rice and cocoa resilience and best practice through the definition of an integrated climate resilient rice and cocoa business model. Through this project, it is expected an increased data on crop vulnerability and water-related future stresses, water and sanitation infrastructures, improved roads to access to markets, post-harvest and processing facilities to add value on raw materials, better health for local populations through enhanced nutrition, reduced erosion and pollution. Participatory and collaborative processes for both rice and cocoa event and policy-making will increase the awareness and understanding of climate risks and potential policy gaps. The trained EPA staff will support climate change awareness raising activities for all actors of the value chain platforms.

Economic benefits.

71. It is expected through this project the following economic benefits: Decreased economic losses due to drought/ flooding through crops calendars and early warning systems; increased productivity through the timely application of agro-meteorological information; Increase in rice yields (1 to 2 tons per hectare, for an average targeted yield of 5 Tons per hectare), leading to increases in household incomes; increase yield in cocoa will lead to the same outcome.

72. More specifically, the project will partner with SLARI to develop a clonal seed garden, the grafting of high yielding varieties of cocoa and develop the capacity to distribute 1 million seedlings (Output 1.1).

    a) The provision of climate resilient foundation Nerica rice will allow for the cultivation of 240ha of land. The project is expected to increase yields by up to 3.22mt per hectare compared to 2.03mt per hectare of the paddy rice on an average farm size of 4ha, hereby doubling net profit margins from US$ 1,500 to US$ 3,000 (Output 1.1).
    b) 40 earth dams will be constructed supporting 5,000 farmers with around 22,000 m^3 of water to double or triple water availability for rice and vegetable production. The dams will also function as fish farms providing additional income and act as additional fertilising agent for the IVS and gardens (Output 1.2).
    c) Based on the GEF pilot the upscaling of the climate smart agriculture, to two 2ha plots from 0.5 are expected to generate a Net Present Value (NPV) of around US$ 4,000 with an internal rate of return of around 70% (Output 1.1).
    d) Transportation from production to storage sites is faster reducing the losses incurred by farmers and therefore increasing their incomes. The warehouses are also rehabilitated to improve the storage conditions, also contributing to reduce losses along the value chain (Output 2.1).
    e) Thanks to the improved domestic water access, health conditions of the targeted populations have

improved, women in charge of domestic water supply also experience an improvement in terms of time availability.

73. **Targeting (social/gender**). The target groups will be fully aligned with the AVDP targeting approach. The project target groups are smallholder farmers through FBOs, ABCs including cooperatives, it will partner with financial institutions, small scale rural entrepreneurs and women and rural youth (18–35 years). Female-headed households with recognised land access entitlement will comprise 40% of the targeted beneficiaries and youth consisting of 40% with granted inheritance rights. The Adaptation Fund will also target the training of illiterate rural women in setting up small businesses in rural solar electrification.

C. Describe or provide an analysis of the cost-effectiveness of the proposed project / programme

74. The activities proposed in this project form a collection of low-regret or no-regret strategies and activities that can be easily managed and that will lead to easily identifiable benefits for local communities. As the Adaptation Fund project will be a blended project, fully integrated into the IFAD supported "Agriculture and Value Chain Development Project (AVDP)" it will benefit from sharing resources and structures. This partnership will boost the cost-effectiveness of both interventions, particularly as there will be a common management structure and a linked M&E framework. Other benefits expected are improved coordination and communication, the application of common procurement and supervision procedures (reducing costs); also, the implementation of complementary project interventions in the project districts. Furthermore, lessons learnt of the combined IFAD/RCPRP+ and GEF/IACCAPFS will be integrated in the course of project implementation.

75. The proposed AF operation focuses on investment and impact on the ground; as such, the project has been carefully designed to attain an optimum level of investment that ensures maximum impact per AF dollar. The project will particularly work towards targeted capacity building and improving the necessary elements (i.e. data collection, impact mapping, and vulnerability assessment at key investment sites) to better focus the investment.

76. The project will use proven mechanisms for community participation, FFS and other capacity building exercises (for farmers, staff of the EPA, Meteorology Department and MAFFS extension staff, also skilled youth), government's involvement and technology transfer.

77. Adaptation Fund funding for Sierra Leone is designed to also be a catalytic for scaling-up adaptation to climate change using sustainable land and natural resources management including reducing use of bush fallow systems; improved water management in uplands and IVS; improving access to weather and climate information - through targeted technical and institutional capacity development and on the ground activities (including demonstrations). The project will work with existing community structures such as the Farmers Business Organisations (FBOs) and FFS, which are being strengthened by MAFFS and AVDP in the AF project areas to promote community-based activities.

    Approaches to make the rice and cocoa sector more productive have so far been focused either on the production chain - technical production standards (inputs) and management cycle, or the marketing issues that regulate prices (outputs). To date few efforts have tackled all rice and cocoa production issues in an integrated manner, which could have led to the perpetuation incentives in these sub-sectors. However, it is increasingly recognized that a single adaptive action on a select element of the rice or cocoa cultivation cycle (for example, seed enhancement alone) will be less effective than if accompanied by adaptive actions in all other elements of the cultivation cycle. Therefore maximum resilience impact can only be achieved through the implementation of adaptations in each of the aspects of the rice and cocoa cycle (input management, cultivation practices, and harvest management).

78. With regards to water management, the proposed interventions are cost effective but also because the proposed interventions are expected to have side benefits in terms of health, environmental integrity and biodiversity conservation, and poverty reduction. The approach taken is also to

rehabilitate existing water infrastructure, to ensure appropriate flows and conservation, while at the same time halting the erosion that is leading to the infrastructure's degradation

79. In the absence of available economic alternative, seeking the adaptation of the rice and cocoa sub-sectors are more cost efficient than other options in the agriculture sector, for example to re-orient agricultural production towards other crops as this would have a high opportunity costs as farmers would lose a few years in the transition (absence of systems, markets, technical inputs, etc…), and yields would remain low unless technical constraints are also addressed

80. As proven in previous IFAD pilot projects, in terms of cost-effectiveness, interventions designed to target the rice and cocoa combined with sustainable use of natural resources and climate resilience measures have a significant chance of generating impact on rural poverty, environmental degradation and ecosystem services, thereby potentially multiplying benefits in the long term.

81. The cost-effectiveness of the project components is further elaborated below.

Table 4: Cost effectiveness of the project interventions

	Cost US$	Number of Beneficiaries	Benefits generated	Alternatives to project
Component 1: Climate-proofed agricultural production and post-harvest combined with livelihood diversification.				
Outcome 1.1. Adaptation measures to foster the resilience of cocoa and rice production and post-harvest are implemented	5,967,179	2 SLARI staff will be trained in Ghana and develop a climate change best practices guide for cocoa farmers. This will be used in the training of 12,000 farmers through the FFS.	Up to date knowledge on climate change adaptation for cocoa production. A best practices guide developed for cocoa production to adapt to the adverse impact of climate change. This will be distributed and form part of the training programmes through the FFS of 12,000 farmers.	A best practices guide is an important vehicle through which farmers are able to learn about climate change and how to adapt to it, but also about environmental best practices. Without it environmental management and climate change adaptation will not be mainstreamed into the FFS training programme.
		The project will support the training of 9000 FBO members of on agrochemical best practices. Community focal points for each of the 300 FBOs will also be trained to monitor post-training.	As part of the AVDP training the Adaptation Fund will train 9000 beneficiaries (300FBOs), through the FFS and the training of community leaders of each of the FBOs on correct agrochemical usage.	Unless trained, there is a risk that farmers will continue to over-apply fertilisers and apply them at the wrong time. For example, on already green rice instead of growing shoots in the mistaken belief that this will further improve rice productivity, instead of damaging it.
		The project will work with the EPA to raise environmental and climate change awareness through the value chain platforms targeting input suppliers, producers, transporters, buyers, processors, ABCs	The Value Chain (VC) platforms which will be held twice a year will be a prime opportunity to raise awareness of all the VC players on environmental best practices and the impact of climate change. The project will partner with the EPA to deliver the awareness	Without the EPA involvement it will miss out on an opportunity to increase its visibility across a nationwide platform. Equally farmers will not benefit from the EPA's added value in environmental management and climate change adaptation. Farmers will not learn about the importance of sustainable NRM, the impact that climate change will

	Cost US$	Number of Beneficiaries	Benefits generated	Alternatives to project
		and cooperatives.	raising workshops.	likely have on their businesses and livelihoods, but also how they are best able to best adapt.
		MAFFS extension workers will be trained who in turn will train around 6,140 in climate-resilient agriculture.	The project will work with Njala University, MAFFS and FAO to use the curriculum currently under development as part of FAOs component of the IFAD GAFSP project. The curriculum will build on the GEF pilot that was carried out under the IACCAPFS, and form the foundation of the FFS training programme to train around 6,140 farmers.	Without the upscaling of the climate smart agriculture approach, farmers will continue with inefficient and destructive rotational slash and burn agriculture. Continued slash and burn agriculture lead to unsustainable biodiversity management through deforestation, erosion, soil leaching, general soil impoverishment, reduced livelihoods, ability to adapt to climate change and reduced food security.
		1 clonal seed garden and grafting of seedlings with capacity to produce 1 million seedlings.	It is important for the sustainability of the cocoa sectors that clonal seed gardens are supported. Climate change adaptation in cocoa production and helping farmers increase their yields and food security go hand in hand. Farmers will be trained on environmental best practices and climate change adaptation but also the Sierra Leone cocoa production facilities will also be supported to ensure greater food security and mainstreaming of environmental and climate	Currently farmer viability is weak owing to a history of neglect and preponderance of low yields associated with unimproved agronomic practices and lack of environmental and climate change best practices knowledge. Without the combined support of providing environmental and climate change adaptation training as well as production support, the prevailing productivity weaknesses will remain.

	Cost US$	Number of Beneficiaries	Benefits generated	Alternatives to project
			change best practices.	
		6MT of Nerica rice will be procured and multiplied to 144MT and applied to 240 ha of IVS.	Supporting the procurement of climate resilient rice, the Adaptation Fund will support the AVPD in improving food security and climate resilience. Nerica rice yields 59% more per ha and farmers can double their profits over traditional rice. Nerica rice also has a consistent 98% germination rate compared to a highly variable germination rate for local rice between 20 and 90%.	Without continued support in providing climate resilient rice varieties, farmers will continue to be dependent on reduced yields, reduced capacity to adapt to the vagaries of climate change and ultimately reduced food security.
Output 1.2. Income-generating activities (fish farming) are promoted as alternative adaptation measures	414,761	The 5,000 beneficiaries benefitting from the earth dams will also receive training for fish farming and post production support.	Establishment of 100 community business model vegetable gardens with solar systems to produce with water solar pumping, processing unit, transport, MIS systems) during the dry season To add extra value to the earth dam investment and provide further climate resilient capacity, the project will train the same earth dam	Without this activity the nutrition and food security is not guaranteed at household level especially during the dry season Without this activity farmers will miss out on additional food security but also economic empowerment. More fertilisers would be needed in the IVS as there would be no nitrogen fixing from the earth dam aquaculture leading to reduced economic and environmental benefits.

	Cost US$	Number of Beneficiaries	Benefits generated	Alternatives to project
			beneficiaries with fish farming and post-production and marketing support. The activity will also develop a best-practice training manual.	
		Around 5,000 earth dam farmers will be supported with additional fish farming capacity.	The 40 earth dams will be stocked with high yielding fingerlings for additional income and food security. Fish farming is also a source of irrigation water; pond water is usually richer in nutrients than well water and also contains nitrogen-fixing blue-green algae, which can improve soil fertility, reducing the amounts of fertilisers required.	With the infrastructure already in place in the form of the earth dams, it would be a waste not to make use of the fish preceding possibilities. Without which farmers will have reduced protein, reduced incomes, and will need greater support in the form of fertilisers for their IVS fields.
Sub-total	**6,564,140**			
Component 2: Climate resilient rural infrastructure				

	Cost US$	Number of Beneficiaries	Benefits generated	Alternatives to project
Output 2.1. Rural transportation and storage infrastructures have been rehabilitated and upgraded to withstand weather extremes	758,014	120 km of rural feeder roads and farm tracks are climate proofed	Lessons have been learned from the RCPRP project to focus more on the environmental impact to avoid obstructing IVS drainage areas, which cause water logging of otherwise arable land. The project will support the carrying out of Environmental Social Impact Assessments that will be conducted in accordance with EPA procedures to ensure planned activities such as culverts are included in the design and implementation of the feeder roads. Depending on funding bridges will also be strengthened against storm water. The EPA will also be invited and supported to conduct supervision of construction to ensure ESIA compliance.	If environmental and climate change adaptive requirements are not identified and implemented, the project will be in violation of national environmental procedures. The overall Sierra Leone investment will also be at risk from increased vulnerabilities to the adverse effects of climate change, but it also risks to inflict negative impacts on the livelihoods of the IVS owners.
		100 warehouses will be rehabilitated to withstand extreme weather conditions and increasing air humidity content. 10,000 farmers will benefits from the improved storage conditions.	The quality and the storage will be improved, leading to higher farmers' incomes encouraging them to further invest in the development of their production and economic activities	Storage quality and capacity is a recurring issue in the development of the cocoa value chain. The improvement of the usability of roads also planned in this project will contribute to ensure the quality of the produce.

	Cost US$	Number of Beneficiaries	Benefits generated	Alternatives to project
Output 2.2: Water supply increased and sanitation infrastructure built accounting for current and future climate risks	841,268	10000 households will have access to potable water, latrines and sanitations facilities	Rehabilitation and extension of 50 drinking water supply facilities and protection of catchment areas Construction of 50 simplified networks, HOP boreholes and standalone water points in surrounding rural villages Construction of 10 public and 150 individual sanitation facilities in the project area.	Water access is a big challenge in the rural areas and climate change has contributed to reduce the water availably. Additionally, Safe drinking water, sanitation, and **hygiene** (WASH) were essential for **Ebola** treatment and preventing the transmission of **Ebola as well as other type of diseases**
Sub-total	**1,599,282**			
Component 3: Institutional capacity development and policy engagement				
Output 3.1: Governmental capacities are strengthened for climate change adaptation	625,969	The EPA and the Meteorological Department's staff and equipment will be strengthened	The activities of EPA and the MD are more efficient and the services rendered by them are more adequately designed to support farmers face climate change consequences.	Without institutional. Staff and equipment support the Meteorological Department and EPA will continue to struggle to provide adequate services to farmers.
		The project will train 2 staff from EPA at postgraduate level. 2 technicians from MD to repair the AWS, and 24 MAFFS.	To ensure operational sustainability of the EPA, advanced post-graduate training will be supported for two staff members. Technicians form the MD will be trained by the AWS supplier in repairing weather stations. Meteorological and MAFFS staff will receive online training from an accredited university on the importance of weather forecasting on farmer agricultural productivity in planting, disease and pest	The Meteorological Department and EPA are chronically underfunded and under capacitated. It is currently receiving some assistance from UNDP however this is not focused on agriculture. A functional Meteorological Department providing forecasting and early warning services for pest and disaster management is essential for agriculture planning but also Disaster Risk Reduction (DRR). Without further support the Meteorological Department will not be able to operationalize the

	Cost US$	Number of Beneficiaries	Benefits generated	Alternatives to project
			management as well as developing low-cost mobile phone text message based early warning systems.	previous GEF AWS investments and make sustainable impacts towards climate change adaptation.
Output 3.2: Monitoring & Evaluation and Coordination of the Adaptation Activities	350,632	EPA staff member and newly recruited adaptation expert at EPA are trained for CC adaptation	The information and services provided by EPA are improved and the resilience of the population is progressively strengthened.	EPA as focal point of environment and climate-related activities in the country has to be supported to ensure its mandate.
Sub-total	**967,601**			
Total	**9,140,023**			
Execution costs	**182,200**			
Implementing agency Fee 8.5%	**776,901.96**			
Overall total	**9,916,924.96**			

D. Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist

82. Fifteen years ago, Sierra Leone emerged from a decade long civil war, but in many ways the country is still on the path of post-conflict development, and governance and good NRM are critical to sustained national recovery. The provision of water services strengthens the social contract between a government and its citizens by re-establishing the government's credibility and accountability and also between communities, provided that users have equitable access to and control over the resources. By building climate resilience into water-reliant sectors like agriculture, the Adaptation Fund is supporting the largest source of rural employment. Investments in water infrastructure, governance, and management will promote more sustainable poverty eradication, support broader economic recovery, and enhance livelihoods.

83. The project is designed within the overall framework of the National Programme of Adaptation (NAPA) and the recently developed Intended Nationally Determined Contribution (INDC), National Climate Change Policy (NCCP) and National Climate Change Strategy and Action Plan (NCCS&AP). Efforts are currently under way in Sierra Leone to convert the NCCP into a climate change act, to establish and strengthen the high-level National Climate Change Council (NCCC) in the office of the President and to support the National Climate Change Secretariat (NCCS) as the primary national government agency for Climate Change response. The longer-term aim is for Sierra Leone to also further develop adaptation and mitigation measures through the development of the NAP and NAMA.

84. The government of Sierra Leone has recognized the importance of agriculture in the reduction of rural poverty in both the PRSP-II "Agenda for Change" (2007-12) and the PRSP-III "Agenda for Prosperity" (2013-18) during which time crop production has increased. The National Sustainable Agriculture Development Plan (NSADP) through the Smallholder Commercialization Program (SCP) has been the key government strategy for sector development. The national institutions relevant to this project are: The Ministry of Agriculture, Forestry and Food Security (MAFFS); Land and Water Development Department; Environmental Protection Agency (EPA); the Meteorological Department; Ministry of Lands, Country Planning and Environment (MoLCPE); Ministry of Transport and Aviation; Meteorology Department; Government Office of National Security; Disaster Management Department; Sierra Leone Agricultural Research Institute (SLARI).

E. Describe how the project / programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund

85. The project will ensure potential adverse environmental impacts are identified and avoided, and where impacts cannot be avoided, a suitable plan is prepared for those impacts to be mitigated and managed. Applicable and relevant national technical standards including best environmental practice will be used to deliver the planned activities.

86. Under this project, an Environment and Climate Specialist as well as a Gender Specialist will be engaged to ensure compliance with the environmental and social policy of the Adaptation Fund as well as meet the requirement of the Sierra Leone National technical standards. These include The Environment Protection Act, 2008 (amended 2010), The Sierra Leone Meteorological Agency Act, 2017, The Forestry Act, 1988[6], The National Land Policy for Sierra Leone, 2015[7] and the 6 EIA Guidelines for the agricultural Development. The project will work to ensure compliance to the AF

[6] Forestry Act of 7th July 1988. Supplement to Sierra Leone Gazette Vol. CXIX No. 38

[7] National Land Policy for Sierra Leone, November 2015. Ministry of Lands, Country Planning and the Environment.

policy and the requirement of the Environment Act will commence at the inception phase where planning for the activities of the programme will commence. The process will identify, prevent and minimise any damage that the proposed activities could cause to people and the environment. Annually, during the annual work planning, the project will identify and propose mitigations measures on activities that could impact negatively the beneficiaries.

The Environment Protection Act, 2000[8]

87. The National Environment Protection Board was established by the Environment Protection Act, 2000. The function of the Board include: (a) facilitate coordination, cooperation and collaboration among Government Ministries, local authorities and other governmental agencies in all areas relating to environmental protection; (b) review national and sectoral environmental policies and make such recommendations or proposals it may think necessary to the Minister; (c) review environmental impact assessments prepared pursuant to this Act and make appropriate recommendations to the Director; (d) investigate or cause to be investigated, any activity, occurrence or transaction which it considers is likely to have or result in harmful consequences to the environment and advise on measures necessary to prevent or minimize such consequences. (e) advise the Minister on areas of environmental protection and control requiring special or additional measures, indicating the priorities and specific goals to be achieved; (f) undertake or cause to be undertaken specific studies and research aimed at developing strategies for the protection of the environment and make appropriate recommendations to the Minister; and (g) consider any other matters which may be referred to it by the Minister and make appropriate recommendations or proposals thereon9.

88. According to the Act, projects that require the submission of an Environmental Impact Assessment (EIA)[10] report related to the AVDP include sub-projects whose activities involve the following, among others. For this AF project, activities identified to require an EIA include building of earth dams under output 1.2. and water supply and infrastructures under output 2.2:

- substantial changes in renewable resource use (e.g. conversion of land to agricultural production, forestry or to pasture land, rural development, timber production);
- substantial changes in farming and fisheries practices (e.g. introduction of new crops, large scale mechanization or use of chemicals in agriculture);
- infrastructure (e.g. roads, bridges, airports, harbours, transmission lines, pipelines, railways);
- exploitation of hydraulic resources (e.g. dams, drainage and irrigation projects, water basin development, water supply);

The Sierra Leone Meteorological Agency Act, 2017[11]

89. The Sierra Leone Meteorological Agency was established by the Sierra Leone Meteorological Agency Act 2017 to serve as the sole authority for the provision of meteorological and climatological services throughout the country. The responsibility of the agency, among others, include to: Advise government on all aspects of meteorology, climatology, climate change and other climate related issues; Promote the use of meteorology in agriculture, food monitoring and in the monitoring of flood, drought, desertification and other related activities; Monitor the meteorological and climatological components of environmental impact assessment, pollution, degradation and other concentrations; Keep in an appropriate and safe archive all meteorological, climatological, climate change data and information for use on future planning, research and implementation of projects as may be necessary; Provide meteorological information, advice and warnings for agriculture, civil and military aviation, surface and marine transport, operational hydrology and management of energy and water resources in order to mitigate the effects of natural disasters such as floods, storms, and drought and disease outbreak[12].

8 The Environment Protection Act, 2000. Supplement to the Sierra Leone Gazette Vol. CXXXI, No 14 dated 2nd March, 2000
9 The Environment Protection Act, 2000, Part II (4a-g)
10 See first schedule of the Environmental Protection Act 2000
[11] Sierra Leone Meteorological Agency Act, 2017. Supplement to the Sierra Leone Gazette Vol. CXLVIII, No 64 dated 28th September 2017
[12] See section 12 (2a-p) of the Sierra Leone Meteorological Agency Act, 2017

90. The Meteorological Agency will not only support this AF project, through the provision of climate weather information's to local cocoa producers specifically for droughts, floods and humidity, but it will also benefit from it through capacity building under output 3.1.

The Forestry Act, 1988[13]

91. The Act stipulates that the duties of the Chief Conservator as the Implementor of this Act shall include, among others: promoting and assisting the practice of forestry in agricultural, pastoral and other areas of the country in order to ensure the continued local supply of forest products and the protection of soil and water resources. According to this Act, no person in a national or community forest shall cut, burn uproot, damage or destroy any tree, remove any timber or other forest produce, clear any land, build any road or structure, take any earth, clay, sand, gravel or stone, cultivate any crop, graze any animal, or conduct any forest operation except pursuant to a concession agreement, contract of sale, licence, confirmed usage right or other authority under this Act. The Chiefdom Council of any Chiefdom may conclude an agreement with the Chief Conservator providing for the constitution as a community forest of any land within the Chiefdom, subject to the approval of the District Officer for the District in which the land is situated. The Forestry Division shall provide all necessary advice and assistance for the management of community forests, including the preparation of a management plan for any community forest which the Chiefdom Council may request.

92. The AF project will ensure that the reforestation and agroforestry activities under output 1.1 are compliant with the Forestry act.

The National Land Policy for Sierra Leone, 2015[14]

93. The new Sierra Leone Nation Land Policy drafted in 2015 has among its objectives: to ensure the security of tenure and protection of land rights to all landholders regardless of their own form of land tenure. As part of the strategy towards guaranteeing and protection of land rights, it requires the government to, among others, address the existing gender inequality and ensure that both men and women enjoy equal rights to land before marriage, in marriage, after marriage, and on succession to rights in land as provided for under customary law, and shall ensure the harmonization of the two regimes (freehold/lease in the Western area hold and community ownership in the Districts) under which land is held in Sierra Leone. It also requires government to ensure that women are accorded the same right and equal protection as men in civil law generally, and in law of succession in particular as the customs and traditions permit, including equal capacity to acquire and maintain rights in property, independently or in association with others regardless of their marital status; repeal any law that discriminates against women on the basis of gender or marital status; pass legislation to eliminate customs and practices that discriminate in work, business, public affairs and participation in decision making in matters that affect their rights generally; and institute the right to affirmative action for women for the purpose of redressing the imbalances created by history, tradition and custom.

94. In terms of land management, the policy mandated government to ensure the sustainability of land for agricultural development programme; and the Ministry of Agriculture shall develop comprehensive training in land-use and capacity assessment for trainers of small farmer organizations to facilitate best practice in land resource management. It also mandated government to promote tree plantation projects in deforested areas, support village community forests development initiatives, and promote re-afforestation and conservation measures. It encourages preparation of participatory environmental action plans by communities and individuals living in environmentally sensitive areas, introduce incentives to encourage the use of technology and scientific methods for soil conservation, encourage use of traditional soil conservation methods, put measures in place to control degradation of land through abuse of inputs and inappropriate land-use practices, and put in place institutional mechanisms for conservation of quality of land for environmental conservation purposes.

[13] Forestry Act of 7th July 1988. Supplement to Sierra Leone Gazette Vol. CXIX No. 38

[14] National Land Policy for Sierra Leone, November 2015. Ministry of Lands, Country Planning and the Environment.

95. The project's activities under output 1.1 (sustainable cocoa farming and rice value chain development) will follow the policy on land tenure and will support the Ministry of Agriculture in training farmers on sustainable land management.

National Sustainable Agriculture Development Plan 2010-2030[15]

96. The new vision of the Ministry of Agriculture, Forestry and Food Security (MAFFS) is to "make agriculture the 'engine' for socio-economic growth and development". Mainstreaming cross-cutting themes including gender and youth promotion, farmer health care issues (including HIV/AIDS, IVS sicknesses and hazards, malaria, etc.) and natural sustainability is one of the cardinal objectives to achieve the vision which is driven by the National Sustainable Agriculture Development Programme (NSADP). The policy document identified the key agricultural sector challenges to include: expert crisis, declining soil fertility, low technology input, agricultural infrastructure, value chain and value additions, input and output marketing, financial services, technology access and farmer empowerment, formal farmer based organisation, access to land, tax structure, investment policy, fisheries, weak sector coordinating mechanism, gender and youth in agriculture, and nutrition diversification and farmer health.

97. The policy's Agenda for Change and Agriculture Sector Vision is anchored on:

- Increasing agricultural productivity (intensification and diversification) in particular among the rural poor smallholders who constitute the poorest segment of society, through a variety of support measures along the entire agricultural value chain, from pre-planting to marketing
- Promoting commercial agriculture through private sector participation
- Improving agricultural research and extension delivery systems
- Promoting efficient and effective sector resource management systems
- Mainstream cross-cutting issues in agriculture including self-sufficiency (e.g. no dependency), gender, youth employment, farmer health (including HIV/AIDS) and environmental sustainability
- Managing and exploiting Sierra Leone's fishery and marine resources
- Managing and exploiting Sierra Leone's forestry resources including the importance of conserving the now depleted forests of Sierra Leone.

98. Commodities that have been identified on a national basis are: rice, cassava, oil palm, fisheries (especially artisanal) and non-timber forests products. These are commodities widely managed by the poorest but with potential for growth and contribution to poverty reduction and food security.

99. The AF project's activities under component 1 will support the NSADP.

100. Funding remains a formidable challenge as the NSADP/CAADP requires a total outlay of USD 333.5 million for its implementation in the first five years (2010 – 2015) with a funding gap of USD 223 million.

National Environmental Policy (Revised October 1994)[16]

101. The goal of the National Environmental Policy is to achieve sustainable development in Sierra Leone through sound environmental management. The policy objectives are to: secure for all Sierra Leoneans a quality of environment adequate for their health and well-being; conserve and use the environment and natural resources for benefit of present and future generations; restore, maintain and enhance the ecosystems and ecological processes essential for the functioning of the biosphere; preserve biological diversity, and the principle of optimum sustainable yield in the use of living natural resources and ecosystems; raise public awareness and promote understanding of the essential linkages between environment development, and encourage individual and community participation in environmental improvement efforts.

102. The strategies include:

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[15] National Sustainable Agriculture Development Plan 2010-2030: Sierra Leone's Comprehensive African Agriculture Development Programme. Version Adapted by CAADP Compact 18th September 2009, Freetown

[16] National Environmental Policy Revised Edition 1994

- To establish and/or strengthen environmental protection standards, monitor changes in, and publish relevant data on; environmental quality and resource use;
- To make prior environmental impact assessment (E.I.A) of proposed activities which may significantly affect the environment or use of a natural resource and to provide relevant information, in a timely manner, to persons likely to be significantly affected by a planned activity and to grant them equal access and due process in administrative and judicial proceedings;
- To promote environmental management through the creation of administrative and infrastructural support with appropriate financial backing;
- To coordinate in good faith with other countries and agencies to achieve optimal use of transboundary natural resources and effective prevention or abatement of transboundary environmental protection.

103. The policy also specifies sector-specific policy direction to land tenure, land use and soil conservation; water resources; forestry and wildlife; biodiversity and cultural heritage; and gender and environment, among others. This AF project will be compliant with the policy including on EIA requirements and compliance with the AF Environmental and Social Policy.

Sierra Leone National Action Plan to Combat Desertification and Land Degradation

104. The first Sierra Leone National Action Plan (NAP) was formulated in November 2004 in fulfilment of the requirements of the UNCCD under the convention's Articles 9 and 10. The NAP was adopted by a broad range of stakeholders including representatives from Ministries, Departments and Agencies, Local Governments Institutions, Civil Society Organizations, Non-Governmental Organizations, Private Sectors and Academic and Research Communities. The Sierra Leone NAP 2014-2018 is formulated in support to the UNCCD strategy 2008-2018 to more effectively implement programs and projects to reverse and prevent desertification and land degradation, and mitigate the effects of droughts in order to contribute to poverty alleviation, improve livelihoods of people and achieve environmental sustainability. The NAP 2014-2018, therefore, is a working document for the synergy among the three Multilateral Environmental Agreements (MEAs) on biological diversity, climate change and land degradation at the country level, and the convergence of actions among Ministries, Department and Agencies (MDAs), local government authorities, the private sector and the civil society organizations (CSOs) to contribute to poverty reduction and environmental sustainability. The short to medium operational plan of SNAP include: creation of livelihood to affected population; sustainable use and management of affected ecosystem; and formulation of a national adaptation platform to climate change for food security and improved resilience. Activities under component 1 of the AF project will be in line with the Plan as they will promote sustainable land management.

The Water and Sanitation Policy

105. The broad objectives of the policy are:

- To develop a comprehensive framework for management of water resources and sustainable development of water supply and sanitation services within an effective legal and institutional framework.
- To address cross-sectoral interests in water resources through integrated and participatory approaches in the planning, development and management of the water resources.
- To improve the provision of safe water supplies and sanitation facilities in urban and rural areas through a coordinated approach, with long term objective of achieving high coverage of piped borne water supply in the country.
- To ensure stakeholders participate in the management of water resources and in the planning, construction, ownership, operation and maintenance of community based domestic water supply schemes in rural areas.

- To put in place implementation strategies for sustainable development and management of water resources in the gradual changing role of the Government from a major service provider to that of coordinator, policy maker and guidelines formulator.

106. The construction and rehabilitation of drinking water supply and sanitation under output 2.2 will be compliant with the Policy.

EIA Guidelines for the agricultural Development

107. The draft EIA guidelines for the Agricultural Development document was prepared by the Environmental Protection Agency Sierra Leone (EPA-SL) under the Environmental Governance and Mainstreaming Project (EGMP) to guide developments in the agricultural sector. The 63 pages document covered: the screening criteria for environmental assessment for agricultural sector investments; scope of Environmental Impact Assessment (EIA), systematic procedures on Environmental Impact Statement (EIS) preparations, and guidelines on common potential impacts and mitigation measures.

108. The document recognizes that about 75% of Sierra Leones labour force is engaged in agriculture that is predominantly small-scale (most farms are less than 1.7 ha in size), with farmers that produce over 80% of the agriculture output operating farms using low inputs and rudimentary technologies. It also recognizes that Sierra Leone's agriculture contributes to wide spread environmental degradation through poor management practices due to slash and burn practices and most farmers are not aware of the linkage between farm practices and environmental degradation. The management and control of pesticides in Sierra Leone is weak. The document outlines the basic steps in the EIA process including: registration, screening, scoping, stakeholders' consultation, and detail EIA. Table below shows the scale of undertaking in agriculture and their level of assessments based on the EPA-SL EIA guidelines.

109. The AF project will follow the guidelines as appropriate.

Table 5: Scale of Undertaking in Agriculture and their level of assessment

Activity/Undertaking	Scale and level of Assessment		
	Small Registration (Permit) [17]	**Medium PEA**[18]	**Large EIA Mandatory**[19]
I. CROP PRODUCTION			
1. Cereals, (Maize, Rice, Sorghum, Millet). Roots and Tubers (Cassava, Yam, Cocoyam)	<2ha (5 acres)	2-8.3 ha	Above 8.3 ha. (20 acres)
2. Vegetables (Tomatoes, Garden Eggs, Pepper, Chilli, Water Melon, etc.)	<0.8ha (2 acres)	0.8-8.3ha.	Above 8.3 ha
3. Horticulture Crops (Pineapples, Citrus, Avocado, Cut Flowers, Mangoes)	<4.2ha. (10acres)	4.2-8.3 ha	Above 8.3ha.
4. Industrial, Tree/Plantation Crops (Tobacco,	<6.2 (15 acres)	6.2-16.6 ha	Above16.6ha.

[17] Registration (Permit): Project not anticipated to result in any adverse environmental impact. Permit could be issued upon registration

[18] PEAR (Preliminary Environmental Assessment Report): Project with limited environmental impacts that can be routinely resolved through application of limited mitigation measures or design changes

[19] EIA Mandatory: Project with the potential for significantly far reaching environmental impacts detailed field study and review

Cotton, Kola Nuts, Oil Palm, Coconut, Rubber, Plantain, Banana)			(40acres)
5. Root and tubers	<2 ha.	2-8.3	Above 8.3 ha.
6. Legumes/pulses	<2 ha.	2-8.3	Above 8.3 ha.
II. OTHER PESTICIDE RELATED ACTIVITIES			
1. Bulk storage of Pesticides	PEAR at all levels		
2. Transportation of Pesticide	PEAR at all levels		
3. Disposal of Pesticides i) Pesticide Containers	PEAR at all levels		
ii) Unwanted Pesticides	EIA mandatory at all levels		
iii) Spray Tank Mixture	License required at all levels		
4. Registration of product	EIA mandatory through Dossier submission and evaluation		
III. IRRIGATION AND DRAINAGE			
1. Surface Irrigation (Basin, Furrow, Border)	<100 ha	100-1,000 ha	>1,000 ha
2. Overhead (Sprinkler, Drip) Irrigation	<100 ha	100-1,000 ha	>1,000 ha
3. Flood Recession (Flood Plain Farming)	<2ha Surface Area	2-10 ha Surface Area	>10 ha Surface Area
4. Ponds and Impoundments for Irrigation	<2ha Surface Area	2-10 ha Surface Area	>10 ha Surface Area
5. Dams and Weirs for Irrigation	<5 m Height	5-10 m	>10 m

Source: EPA EIA Guidelines for t**he Agricultural Development**

110. According to the guidelines, the following areas are considered as environmentally sensitive areas where any agricultural undertaking shall require an EIA[20]:

- Wetlands (e.g., Mangroves, Estuaries and Lagoons)
- Ramsar sites or potential Ramsar site (Principally for conservation of birds but also includes wise use of wetland areas)
- Biosphere reserves (Internationally designated site as part of a global network combining both conservation and sustainable use of natural resources)
- Geological conditions (e.g. Earth Quake prone sites)
- National Nature Reserve (Nationally important nature conservation sites for biological or earth science interest)
- Highly erodible and marginally productive cropland (Areas along slopes with critical slope 17% and above with potentially unstable soils prone to erosion)
- Natural flood barriers
- World Heritage Sites (Protection of natural and cultural areas of outstanding universal value or areas of unique historical/archaeological or scientific interests)
- Site of Special Scientific Interest (SSSI) or potential (Special interest by reason of its flora, fauna, or geological or physiographical features).
- National Parks (Protection of wild and beautiful landscapes)
- Marine Nature Reserve (Conservation and protection of marine flora and fauna and sites of geological or physiographical interest).
- Areas which constitute the habitat of any endangered or threatened species of indigenous wildlife (flora and fauna)
- Areas Sacred Grooves/Cultural sites.
- Sources of Water Bodies and areas close to a water body (a minimum distance of 30m, aquifer recharge areas, areas with high water table (wells, boreholes, porous soil, etc.)
- Areas near Apiaries (honeybee sites), wildlife refuges, or parks, and

[20] These will move the AVDP to Category 'A' in terms of environmental risks. The AVDP will take all steps to avoid sub-projects in environmentally sensitive areas

- Off-Reserves forests (riparian forests, hill forests, fire protection areas and buffers)

111. The project will take all necessary steps to avoid subprojects in environmentally sensitive areas.

F. Describe if there is duplication of project / programme with other funding sources, if any

112. UNDP is in the process of closing a second phase of a 2013 project in partnership with the Meteorological Department to procure and install eight synoptic weather stations, which are different to the agricultural weather stations procured through GEF/IFAD. The Adaptation Fund design mission met with UNDP, which confirmed that eight weather stations have been installed in Freetown, Rokuli, Kenema and Kailahun and one is being procured for the International Lungi Airport. The mission has verified that there is no overlap with UNDP for the proposed efforts to build the capacity of the Meteorological Department. In view of the changing status of the Meteorological Department into an agency with an independent budget, UNDP is in the process of conducting an assessment of what the potential revenue streams can be, the results of which should be included in the proposed management plan. As the only other major partner to the Metrological Department, UNDP has been consulted and agreed that there was a need for the Adaptation Fund initiative to hire an external consultant to design a management plan and have requested to be kept informed in the process.

113. Another potential area of overlap was identified by the design mission as being the climate smart agriculture activities originally piloted by GEF in partnership with Njala University. These are now also being implemented by other agencies namely WFP in support of the EPA. They are however small in scale and do not pose a significant overlap as the upscaling proposed by the AF is significantly different with small mechanisation and a newly developed curriculum in partnership with FAO, MAFFS and IFAD/GAFSP project. MAFFS is also continuing with the community forestry plans with other funding sources, which was also implemented under the GEF IACCAPFS, however the Adaptation Fund would introduce an innovative low-cost and low-emission charcoal kiln. There is limited overlap and an added value to the Adaptation Fund proposed project.

114. The project is aligned to IFADs Country Strategy Note (CSN) by directly aiming to increase the incomes and food security of the target groups21. IFAD has a long record of supporting development in Sierra Leone. Since 1980 IFAD has financed US$ 250 million over seven loans and three grants. Its operations were suspended during the 10-year civil war, but resumed in cooperation with the African Development Bank (AfDB) once the war ended in 2002. IFAD resumed direct supervision in 2008 and recently completed the 11-year and US$ 50.3 million Rehabilitation and Community Based Poverty Reduction Project (RCPRP). It was supported during its second financing phase (2011-2017) by the Global Environment Facility (GEF) Least Developed Countries Fund (LDCF) with a US$ 2.6 million project on Integrating Adaptation to Climate Change into Agricultural Production and Food Security in Sierra Leone (IACCAPFS). The latter provided food security through climate resilient rice varieties, but also piloted small-scale agricultural irrigation systems and raised public awareness on the impact of an increasingly variable climate on the livelihoods of the rural poor.

Table 6: Synergies with other projects

Project and funder	Main activity	Synergies	Duplication
UNDP - Strengthening Climate Information and Early Warning Systems for Climate Resilient Development and	• Transfer of technologies for climate and environmental monitoring infrastructure	This and UNDP's project are sharing the same partners and type of activities. The project will build on that network and	There is no duplication, as the investment in synoptic station will be in different areas

[21] Vulnerable households, women and youth.

Adaptation to Climate Change	• Integration of climate information	framework to support its activities.	
GEF/IFAD - Integrating Adaptation to Climate Change into Agricultural Production and Food Security (IACCAPFS)	• Installation of synoptic weather stations • Meteorological institute capacity building	This and IFAD's project are sharing the same partners and type of activities. The same partners, i.e. the Environmental Protection Agency, the Meteorological Agency and the Ministry of Agriculture and Forestry will be involved in the implementation of the AF project. Building on lessons learned from IFAD's project, the AF-proposed project will continue and scale-up the activities of the GEF-funded project.	Investment in synoptic station will be in different areas. The AF-proposed project is intended to continue and scale-up the activities of the GEF-funded project.
IFAD - Rural Finance and Community Improvement Programme	• Rural finance support to smallholder farmers	Although the AF-proposed project does not address rural finance, lessons learned from IFAD's experience with community rural finance will help in designing sustainability pathways for the project.	None
IFAD – Smallholder commercialization Programme (SCP) Global Agriculture and Food Security Programme	• Small-scale irrigation development	Lessons learnt from the IFAD project will be used to improve the outcome of AF-proposed project related to increasing crop yields and mainstreaming sustainable agricultural practices.	None

G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned

115. Learning and knowledge management are integrated throughout the project starting from integrating the lessons learned from the pilot IFAD/GEF IACCAPFS project into the Adaptation Fund project, but also applying and building upon knowledge generated from other projects and agencies such the

IFAD/GAFPS and FAO. The project will generate knowledge through conducting vulnerability mapping and climate research, this research will focus on assessing the future geographical suitability for cocoa production in Sierra Leone by looking at maximum dry temperatures that are projected to be limiting for cocoa; understand what the differentiation of climate vulnerability is within the cocoa producing regions; what the implications are for future shifts in cocoa production; and recommend adaptation measures. The project will work with FAO, MAFFS and NPAA to contribute to the development of the first map of protected forests in Sierra Leone. These maps will made available to MAFFS, and the NPAA but also be used to map cocoa and oil palm cash crop farms supported by IFAD as well as FAO projects. The vulnerability mapping of areas most susceptible to slash and burn will also be mapped adding to knowledge of the scale of the problem at a national scale.

116. As well as researching crop failure, weather index insurance and exploring the viability of green rural finance to support energy efficient technologies, the project will also design tools for knowledge dissemination to the farmer level. This will be in the form of best practices manuals and guides for tree crop production, fish farming, a curriculum developed for climate smart agriculture that will be implemented through the FFS and an early warning system tool to disseminate agriculturally related meteorological data and pest management warnings. Additionally, the project will develop case studies that will help disseminate lessons learned and foster replication or scaling up of successful climate smart crop production enhancement. Whenever possible, and building from surveys as relevant, the project will facilitate baseline studies for future interventions.

H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy of the Adaptation Fund

117. In response to the request from the Government of Sierra Leone's Ministry of Agriculture Forestry and Food Security (MAFFS), IFAD is continuing its financing of rural development projects in Sierra Leone. A draft project concept note was developed by IFAD for the Adaptation Fund project in the agricultural sector in Sierra Leone based on upscaling key previous GEF/IFAD project activities. A joint IFAD/AF formulation mission has been carried out and this draft concept note was shared and discussed with the main government institutions. The proposed project proposal is the result of this process.

118. Individual meetings were held with MAFFS, the Meteorological Department, Njala University, the Environmental Protection Agency (EPA), Sierra Leone Agricultural Research Institute (SLARI), NGOs cooperatives, FBOs and service providers. As the executing entity for the proposed IFAD AVDP project, MAFFS is a primary stakeholder, the EPA has been consulted in this process. UNDP and UNWOMEN have also been consulted.

119. Consultations at the local level have been conducted in the two districts where the project will be operating. The consultations focused on farmer groups, including women groups, and implementing partners to identify challenges, their needs and type of technical support to be provided by the project partners to support their capacity in adapting to climate change. Lessons learned from the previous IFAD/RCPRP+ and GEF/IACCAPFS projects have been integrated into the project design. The findings and recommendations have been verified through the joint formulation mission and successful activities identified for upscaling, activities that have remained incomplete due to the EVD and budgetary constraints have also been included to ensure continued and committed developmental support.

120. The list of persons met is presented in Annex 1 and reports of relevant meetings with communities are presented in Annex 2.

I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning

121. This project is considered as an additional climate financing to climate-proof and mainstream climate considerations in IFAD-Sierra Leone baseline investment on cocoa and rice value chain. The project aims at providing direct support to 35,000 smallholder farmers most vulnerable smallholder cocoa and rice farmers in their transition to more sustainable agricultural production practices and adaption to climate change while facilitating their access to markets. Additionally, the project will target 10,000 rice producers and 5000 cocoa, of which at least, 40 percent will be women and 40% young people involved in the rice and cocoa value chains.

122. To further raise the technical capacity of the main governmental organizations involved, a training needs assessment will be carried out to identify required capacity developments for effective and efficient implementation of the project and adaptation planning capacity, with a focus on climate resilience in the cocoa agricultural and water sectors.

123. The AF IFAD-Sierra Leone **PROMOTING CLIMATE RESILIENCE IN THE COCOA AND RICE SECTOR AS ADAPTATION STRATEGY IN SIERRA LEONE** identifies three main components:

- Component 1: Climate-proofed agricultural production and post-harvest combined with livelihood diversification measures;
- Component 2: Climate-resilient rural infrastructure; and
- Component 3: Institutional capacity development and policy engagement.

124. Planned activities under the Adaptation Fund on climate adaptation and sustainable management of natural resources will contribute to mitigate climate risks on the cocoa and rice value chain development while reducing GHG emissions and complement the IFAD baseline investment in Sierra Leone. Best practices from this AF will be replicated at national and regional level.

J. Describe how the sustainability of the project/programme outcomes has been taken into account when designing the project / programme

125. The project proposes measures for adapting to climate change through rice and cocoa production climate proofing, along with intensification and sustainable expansion; proposes actions to reduce climate risks and to sustainably manage the rice and cocoa production while introducing diversification interventions with fish farming and community gardening to expand the production during the dry season as an adaptation mechanism.

126. This project itself is expected to be sustainable and to generate sustainable impact. The overall objective is an integrated approach with an IFAD development project that has a bigger and stronger coordinated institutional arrangements and managing information flows to reduce duplication of effort positions, synergies for continued implementation and sustainability.

127. The project will build on the current thrust for a country programme approach to the coordination and management of all IFAD-assisted projects in Sierra Leone. Accordingly, the MAFFS remains the lead implementing agency and the National Steering Committee (NSC) chaired by the Minister of MAFFS shall provide oversight, direction and advice for project implementation, and in particular, approve the annual work plan and budget (AWPB) of the project as well its periodic progress reports. The Ministry of Land, Country Planning and the Environment (MLCPE) will be co-implementing agency especially on activities related to climate adaptation. The NSC will be broadened to include representation of the MLCPE, key public-sector stakeholders as well as farmers associations and the private sector. The National Programme Coordination Unit (NPCU) will be responsible for the day-to-day coordination of project activities in coordination with the MLCPE. At the district level, the District Agricultural Officer (DAO) of MAFFS will be responsible for coordinating the implementation of project activities, and will be supported by a dedicated M&E Assistant as the focal point for the collation of data and reporting on project-specific activities at the district level. A range of public and private sector service providers

and implementation partners will be engaged by the project to facilitate project implementation and build the capacity of the project target groups.

128. Supports institutional strengthening for organizations and smallholder farmers as well as all actors affected by climate change along the entire value chains; favours the development of national markets and consolidation of international markets for certified cocoa, through a strategy of quality improvements; and (v) takes actions to ensure a preeminent role to small farmers. By doing so, the project will promote a paradigm shift towards sustainable climate resilient rice and cocoa value chain and low carbon emissions. The project will work through other national and private institutions and will strengthen national capacities on climate resilient cocoa value chain. This new approach will be also mainstreamed into the country national policies, county local plans, agricultural sector plan and agricultural investments to ensure a scaling up.

129. On the policy dialogue, the project will ensure that the government will commit in the budget appropriations or other minimum levels of investments for scaling up the best practices supported by this AF. The project integrates and has activities of knowledge management as a core part of the sustainability and replicability strategy of the initiatives, through systematically documenting and disseminating good practices, linking with school and community projects in order to secure broad dissemination of project results and the transmission of traditional knowledge, know-how and experience to next generations of small holder farmers, young entrepreneurs, Sierra Leonean government planners and policy makers. Development plans will address the issue of climate change resilience and demonstrate the sustainability. In summary, component 3 on institutional capacity development and policy engagement will focused on institutionalising the outcomes of the project. Dialogues and stakeholder consultations and stakeholder mobilization done through capacity building will help to achieve sustainability. A strong focus on building local knowledge, capacities and incentives – as well as strong project focus on ensuring gender equity in all operational matters are expected to lead to social sustainability. It will be important during consultations to identify community-based champions on climate resilient rice value chain, cocoa value chain; community organisations that are women-led which will ensure social sustainability.

K. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project / programme

130. As part of the project design, a preliminary screening and scoping risk assessment was developed against AF principles to assess environmental and social impact risks as well as a risk assessment dictated by the National Environmental Policy (Revised October 1994)[22] and The Environment Protection Act, 2000[23]. These assessments are documented in the Environmental and Social Management Plan (ESMP) in section C Part 3 of this document and the Environmental and Social Management Framework (ESMF) of the AVDP project provided as **Annex 4**. The ESMP is focused on process-oriented risk management where mechanisms are built into programme implementation to ensure that rigorous risk assessment and management measures will be applied to all component activities including unidentified sub-projects (USPs) in each of the component. With USPs, the proposed interventions and investments have not been fully defined at the project approval stage. Further risk assessments will be undertaken at this stage, which include the AF principles checklist and completing the Environmental Significance Declaration Permit (ESD) checklist. This work will be supported by the EC and Gender specialists with oversight from the M&E specialist.

131. Sub-activities at the various steps of project implementation will be screened against the 15 principles of AF. The checklist attempts to apply the 15 Principles to a national context in a way that will be easily understood by project partners and beneficiaries alike.

[22] National Environmental Policy Revised Edition 1994

[23] The Environment Protection Act, 2000. Supplement to the Sierra Leone Gazette Vol. CXXXI, No 14 dated 2nd March, 2000

132. Table below provides an overview of the assessment against AF principles and the principles that require further assessment and management are discussed in more detail.

Table 7: ESP Screening Checklist for compliance with the Environmental and Social Principles

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law	✓	
Access and Equity		There is a high risk of land tenure issues, with a key role of paramount chiefs in the distribution of land.
Marginalized and Vulnerable Groups	✓	
Human Rights	✓	
Gender Equity and Women's Empowerment		There is a risk of social exclusion of women and youth due to limited access to land. There is also a risk of low mobilization of women hence a gender inequality in targeting beneficiaries
Core Labour Rights	✓	
Indigenous Peoples	✓	
Involuntary Resettlement		Initial screening and compliance assessment required, during implementation even though no roads for more that 10 km which may lead to involuntary resettlements planned, The programme activities will be designed and implemented in a way that avoids or minimises the need for involuntary resettlement. When limited involuntary resettlement is unavoidable, due process should be observed so that displaced persons shall be informed of their rights, consulted on their options, and offered technically, economically, and socially feasible resettlement alternatives or fair and

		adequate compensation. This is anticipated in areas where irrigation infrastructures and roads rehabilitation are planned. Potential situations can be identified at Inception Phase and necessary measures taken.
Protection of Natural Habitats		There is a risk of wetland (especially mangrove) degradation and removal for rice paddies and vegetable farming
Conservation of Biological Diversity		There is a risk of biodiversity loss (in IVS) caused by bush fires and slash and burn agriculture
Climate Change		There is a moderate risk of GHG emissions from rice paddies
Pollution Prevention and Resource Efficiency		There is a risk of water pollution and waste proliferation due to the use of inorganic fertilizer and agrochemicals.
Public Health		There is a moderate risk of unsafe and non-healthy working conditions, waterborne diseases and dust from road construction
Physical and Cultural Heritage		There is a low risk of loss and disturbance of cultural resources such as sacred forest and archeological site
Lands and Soil Conservation		Deforestation and upland crop production might affect soil quality and conservation, as well as flooding, water logging, soil salinization and alkalization

133. Based on the environmental and social risks screening against the 15 principles of the AF ESP, the project is categorized as a **Category B** project, with a few, small potential adverse impacts that are localized, reversible or easily mitigated. Accordingly, an Environmental and Social Management Plan has been prepared (see Part 3, section C).

PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for project / programme implementation

134. The **implementation arrangements** for the project will build on the current thrust for a country programme approach to the coordination and management of all IFAD-assisted projects in Sierra Leone. Accordingly, the MAFFS remains the lead implementing agency and the National Steering Committee (NSC) chaired by the Minister of MAFFS shall provide oversight, direction and advice for project implementation, and in particular, approve the annual work plan and budget (AWPB) of the project as well its periodic progress reports. The Ministry of Land, Country Planning and the Environment (MLCPE) will be co-implementing agency especially on activities related to climate adaptation. The NSC will be broadened to include representation of the MLCPE, key public-sector stakeholders as well as farmers associations and the private sector. The National Programme Coordination Unit (NPCU) will be responsible for the day-to-day coordination of project activities in coordination with the MLCPE. At the district level, the District Agricultural Officer (DAO) of MAFFS will be responsible for coordinating the implementation of project activities, and will be supported by a dedicated M&E Assistant as the focal point for the collation of data and reporting on project-specific activities at the district level. A range of public and private sector service providers and implementation partners will be engaged by AVDP to facilitate project implementation and build the capacity of the project target groups.

135. The MAFFS National Steering Committee (NSC) will provide oversight, direction and advice for project implementation, and in particular, approve the AWPB of the project as well as its periodic progress reports. The NSC will include representation of key stakeholders including, The Ministry of Land, Country Planning and the Environment (MLCPE),the ministries for Finance, Economic Development and Planning, Trade and Industry, Local Government, Community Development, Social Welfare, Gender and Children Affairs, Lands, Country Planning and Environment, EPA, Youth and Sports, Directorate of Feeder Roads of SLRA, the Chief Agricultural Officer/Technical Head of MAFFS, two members of Farmers Associations (one for staple crops and one for tree crops), and two private sector representatives (one for staple crops, especially rice, and the other for tree crops). The National Programme Coordinator of NPCU shall be the Secretary of the NSC.

136. The existing IFAD NPCU will implement the project in partnership with the District Government/ District MAFFS, partner private sector entities and FBOs/Cooperatives. This responsibility includes project planning, financial management, contracting implementing partners for specific activities and tasks, Environment and climate Expert, M&E, communication and knowledge management (C/KM), supervision of project activities at the district level, facilitating linkage with governmental, private sector and development institutions, and integrating project experience into policy dialogue. A small complement of Social Mobilization staff would be added to the NPCU and district level to lead the farmer organization (FO) and mobilization process, facilitate business planning, as well as the interface between the FOs and private sector and extension service providers. A matching grant (MG) steering committee will also be established to manage the funds. Staff implementing the project will have opportunity for training to enhance their performance. At the district level, the DAO of MAFFS will be responsible for coordinating the implementation of project activities, and is expected to lead the market linkage platforms at the initial stage of development. S/He will be supported by the team of subject matter specialists and extension agents.

137. IFAD will supervise the project directly and the IFAD Country Office will provide continuous back support and guidance. A baseline study will be carried out in the first year of project implementation to establish future monitoring and impact assessment benchmarks. A Mid-Term review will be carried out jointly with the government to evaluate project progress, identify areas for further improvement and revise project approach, activities and budgets on the basis of MTR findings.

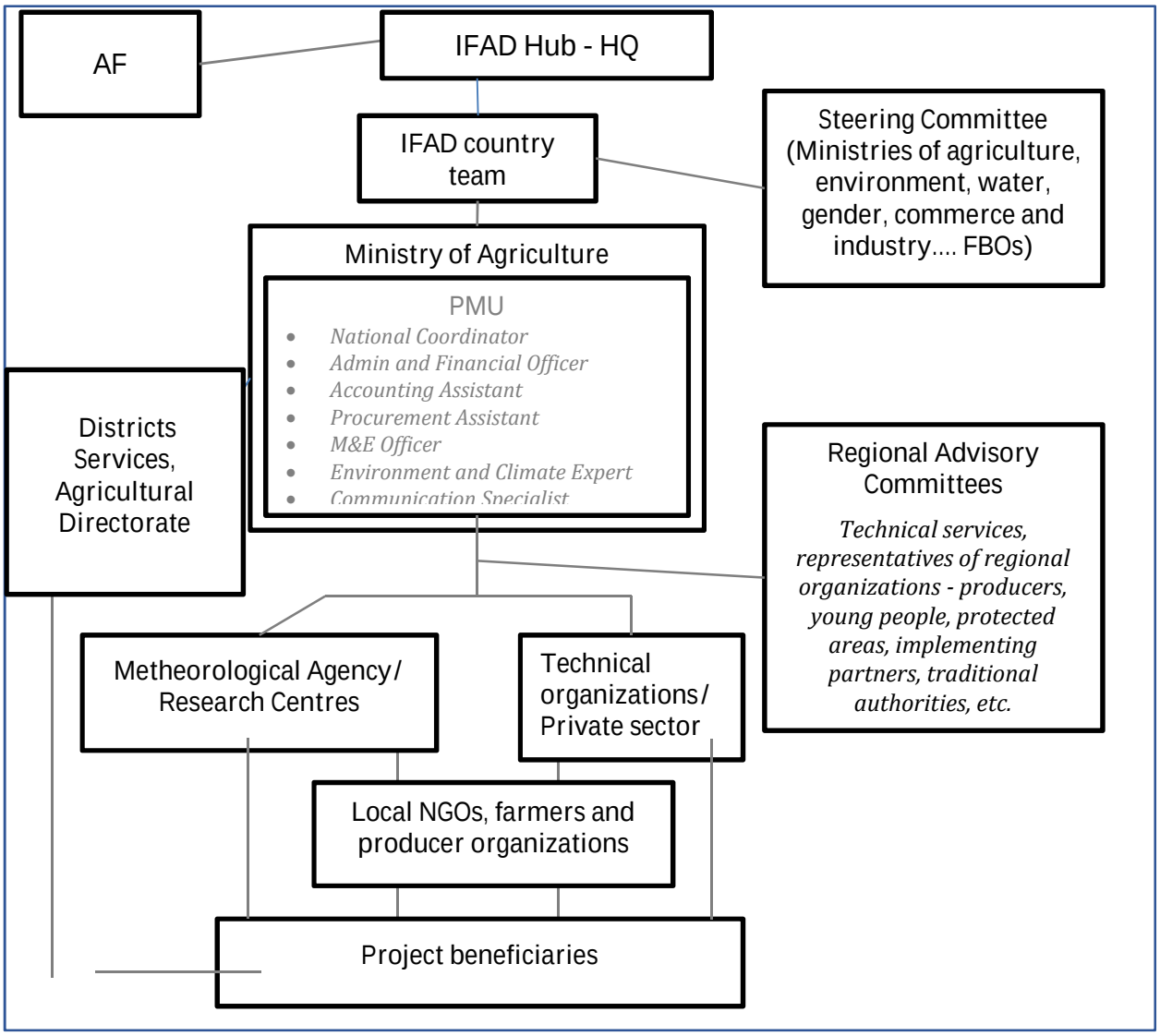
Further to the staff listed above, there will be two additional staff to ensure that the project is compliant with the ESS and Gender:

- Gender Specialist,
- Communication Specialist (consultant)

Table 8: Staffing

Additional Staffing	Responsibilities
Gender specialist (long term consultancy)	Report directly to the national project coordinator Initial Gender Action Plan that will be monitored and annual reporting against the action plans in coordination with the IFAD gender regional team Appraise the programme document and proposed work plans and activities for each component to ensure compliance with the AF Gender Policy Focal point for gender policy; Implementation of the Gender related activities; participate Input into the project terminal report
Communications specialist (retainer)	Report directly to the national project coordinator Design a communications strategy based on the overall objectives and programme strategic results framework The Strategy will assist the Project Coordinator to communicate effectively and meet core organisational objectives. Collaborate with M&E Specialist to design a knowledge management strategy based on the overall objectives and strategic results framework and that harmonises and creates synergies among knowledge products and lessons

Graph: Project organigram



138. **Other potential partnerships.** The World Food Programme (WFP) and Food and Agriculture Organization (FAO) have a long history of working with GoSL and engagement with previous IFAD funded projects. FAO engagement will be sought in institutional strengthening of FOs and government agencies, production technology transfer and FO based business and production planning. WFP engagement will be sought for farmer-based supply contracts for its Food for Work initiatives, and nutrition and food security interventions. Closer engagement will be pursued with the World Bank (discussions having been held between the design team and the Smallholder Commercialization and Agribusiness Development Project (SCADeP) regarding the adaptation of the matching grant manual, and the non-duplication of community-level infrastructure and other interventions with AVDP), African Development Bank (AfDB), and Islamic Development Bank (IsDB) for alignment of approaches, policy engagement with Government and possibilities of co-financing. Partnership possibilities with bilateral agencies engaged in agriculture sector (JICA, GIZ, EU, USAID) would also be actively explored. A range of public and private sector service providers and implementation partners will be engaged by the project to facilitate project implementation at different stages of the value chains and build the capacity of the project target groups towards agriculture as a business.

B. Describe the measures for financial and project / programme risk management

Table 8: Project risk table

Risk	Initial risk assessment (H = high, M = moderate, L = low)	Proposed mitigation measure	Final risk assessment
Insufficient capacities to appropriately manage the day-to-day implementation of the project	M	- A National Country Programme Unit (NPCU) with administrative and financial management autonomy that assumes the fiduciary management functions of the project. - Recruitment of experts with specific experiences in development project management and financial management procedures of the lessors and mastery of an accounting software. - IFAD country office will participate as an observer in all stages of the recruitment process. - The staff of the NPCU will be linked to the project by renewable annual contracts based on a performance evaluation, - Start-up support takes into account training in financial management.	L
The project budgeting process doesn't respect procedures and doesn't allow for a good implementation of project activities	M	- The budget preparation process will be carried out by the NPCU staff and the AWPB will then be submitted to the steering committee for approval. The AWPB will provide details of activities, their unit and overall costs, expected results and monitoring indicators, and their implementation modalities including procurement procedures. - The budgeting process will be defined in the project procedures manual, and should be harmonized with the budgeting process of other IFAD projects. - The approved AWPB must be entered into the accounting and financial management software to monitor its implementation. - Quarterly financial reports including information on budget monitoring should be submitted to the ministries of guardianship, steering committee and IFAD.	L

Project financial flows and disbursement processes are not timely and jeopardize the implementation of activities on the ground	M	- Availability of funds will be made through the standard circuit planned and already tested by other IFAD projects including replenishment of the designated account, direct payment and reimbursement. - The use of Certified Statement of Expenditures in support of expenses incurred by the Project is also planned. - As regards the implementing partners and public services, the resources will be transferred in accordance with the signed agreements and service contracts, which will have to provide mechanisms for the provision of funds based on the work plan and budget of the convention/contract, and disbursements based on a quarterly / semi-annual report of the activities carried out by the beneficiary/provider/partner.	M
Project implementation and financial management procedures do not guarantee sufficient transparency and accountability	H	- Three (3) levels of security ensure transparency and control of operations and also mitigate the risk of distortion and dysfunction related to management: (i) The fact that only one person cannot conduct an operation in its entirety (from beginning to end, from execution to final control); (ii) the implementation of accounting self-audits; (iii) Implementation of the IFAD Representation's proximity monitoring in Sierra Leone and joint Government/IFAD support and supervision missions and an annual audit of the accounts.	L
The project accounting system and financial procedures are not sufficiently formalized	H	- The Project will be equipped with management software covering all financial aspects: accounting, commitment, financial statements, budget monitoring, contracts, etc. The staff will have to master the software in order to be able to correctly parameterize it to meet the needs of management. - The monitoring of financial commitments and financial achievements will be based on the use of accounting and financial management software as well as the production of financial dashboards for use by the NPCU, SC and IFAD. -The financial statements of the Project will be drafted according to the principles in force and by respecting the minimum information required by the lessor. -The annual financial statements of the Project for the year N will be established no later than the end of February of the year N + 1. The unaudited annual financial statements will be submitted to the SC and IFAD for review. -The Procedures Manual will provide a detailed phasing of all the stages leading to the closing of the accounts (monthly / quarterly / annual) and the preparation of the financial statements - The accounting system used in the framework of the Project should allow the registration of tax exemptions obtained from the government	L

The project financial procedures do not allow for proper and regular monitoring	M	Financial monitoring based on: a) regular preparation of withdrawal requests, based on rolling quarterly cash plans, and bank monitoring of the designated account and the account of operations; (b) budget monitoring; c) accounting monitoring; d) technical and economic monitoring provided by the administrative and financial officer b) The administrative and financial officer will prepare quarterly financial and accounting reports (interim financial reports) which he will submit to the Coordinator for signature and send for review to the Steering Committee and IFAD.	L
Current climate and seasonal variability and/or hazard events result in poor restoration results or agricultural yields.	H	Current climatic variability will be taken into account in the planning of activities along the value chains (rice and cocoa). Drought- and flood-resilient species will be used. Techniques to assist plant growth particularly in the seedling/sapling phases and to reduce risk of damage from climate change hazard impacts will be used. Species will be planted in appropriate seasons to reduce risk of hazard impact. Diversity in planted crops will reduce this risk, Diversification with farm fish and gardening	M to L
Loss of government support may result in lack of prioritisation of AF project activities	L	Regular stakeholder consultation and involvement will be undertaken to ensure that government maintains its commitment and considers the AF project as a support to its forestry and agriculture programmes.	L
Communities may not adopt activities during or after the AF project	M	The interventions will be institutionalised within The ministry to ensure sustainable delivery post project implementation. Capacity building and training of the communities will be undertaken to improve their awareness and understanding of the benefits of the activities.	L
Priority interventions implemented are not found to be cost-effective.	L	Cost-effectiveness is a core principle in the implementation of adaptation measures. Detailed information will be recorded regarding cost-effectiveness. This will be widely disseminated and will be of use to future adaptation initiative	L

C. Describe the measures for environmental and social risk management, in line with the Environmental and Social Policy of the Adaptation Fund

139. A preliminary environmental and social assessment was performed as part of the project design to ensure existing environment and social standards applicable to targeted communities beneficiaries are taken into account in the context of the AF Principles. The assessment against the 15 principles and the identified mitigation mesures are summarized below:

1. *Compliance with the Law*: Security of tenure by women and youth remains a challenge in Sierra Leone. Without secure ownership or at least guaranteed access to land for women and youth, the development of sustainable agri-enterprises will be extremely difficult, if not impossible and this could negatively affect the project. Women and youth are often not sufficiently represented even in making decision that affects them. Thus women and youth not only risk being marginalized in land access, but also when opportunities or slots are allocated for economic activities in the community. Weak and non-transparent governance structures as well as exclusionary and divisive politics poses the risk of the project being hijacked or captured by the political and administrative elite to benefit only their cronies with significant impacts on the target beneficiaries. Conflicts resurgence in a context of a post conflict country could also undermine the potential benefit of the project. The project at Inception phase will demonstrate compliance to AF E&S Policy by describing the process of allocating and distributing programme benefits but also mitigating. It will also state clearly that there will be neither discrimination nor favouritism in accessing project benefits.
2. *Access and Equity* – Beneficiaries have all information's about the project and information and transfer knowledge are being used through community radio, communication specialist, community groups such as, youth and women organizations, family groups, management committees, farmers associations, value chain actors. The foundation for fair and equitable access to benefits, without impeding access will be promoted. The communication specialist will raise the awareness of communities and information.
3. *Marginalised and vulnerable groups* – The project target groups are poor smallholder farmers women and rural youth (18 – 35 years) that are the most vulnerable to climate change. Female-headed households with recognised land access entitlement will comprise 40% of the targeted beneficiaries and youth consisting of 20% with granted inheritance rights. The project will include female led tree crop farms and will emphasise the integration of vegetable growing during the end of the IVS rice-cropping season, as these are typically women managed. At Inception Phase, the project will define the characteristics of marginalised and vulnerable groups in the targeted areas using categories that define them appropriately. The process will also include identification, and description of impacts that each marginalised and vulnerable group are likely to experience from the programme and how the adverse impacts are to be mitigated
4. *Core Labor Rights* – Core labour rights concern gender aspects, respect for workers; maximum work hours; child labour; etc. The project will ensure that national working standards are respected on production sites. The project will also ensure that appropriate wages will be paid per assigned task, and that no child labour will be employed.
5. *Public Health* – Working conditions across sectors are generally poor in the rural areas of the Districts in Sierra Leone because of general poverty, poor production methods, and limited awareness of and non-compliance with health & safety standards. In the agricultural sector, most farmers do back-breaking work and are regularly exposed to agro-chemical toxins from the use of fertilizer and pesticides. In addition, due to the high level of poverty, children often help in the production and/or processing of agricultural commodities. Cases of water-borne diseases among rice farmers in the IVS have been reported due to non-usage of protective/safety shoes. The project will partner with the Ministry of Health to raise awareness of local communities
6. *Human Rights* – Sierra Leone recognises fundamental human rights and freedom in its constitution that exist and shall continue to exist without discrimination by reason of race, national

origin, colour, religion, opinion, belief, or sex. The project activities will not engage in any activity that may result in the infringement on the right of any person during implementation.

7. *Gender Equality and Women Empowerment* – The programme activities will be designed and implemented in such a way that both men and women have equal opportunities to participate in consultation, training and awareness activities; receive comparable social and economic benefits; and 3) do not suffer disproportionate adverse effects during the development process. The Gender Specialist and the regional social inclusion team will ensure equal participation of men and women during inception phase, and throughout the implementation of programme. Approved and developed gender policies identified in Section D will guide this process.

8. *Indigenous People* – according to the definition of indigenous people no indigenous people have been listed in Sierra Leone but the project will work to include minority groups in the project. At Inception Phase where various ethnic groups can be identified at project activity sites and their roles in the activity clearly identified.

9. *Involuntary Resettlement* – Involuntary resettlement due to project activities is not planned as the project will not construct feeder roads longer that 10 km each but rehabilitate existing projects. However, the project activities will be designed and implemented in a way that avoids or minimises the need for involuntary resettlement. When limited involuntary resettlement is unavoidable, due process should be observed so that displaced persons shall be informed of their rights, consulted on their options, and offered technically, economically, and socially feasible resettlement alternatives or fair and adequate compensation. This is anticipated in areas where irrigation infrastructures and roads rehabilitation are planned. Potential situations can be identified at Inception Phase and necessary measures taken.

10. *Protection of Natural Habitats* – The project will not involve unjustified conversion or degradation of critical natural habitats, including those that are (a) legally protected; (b) officially proposed for protection; (c) recognised by the national government for their high conservation value, including as critical habitat; or (d) recognised as protected by traditional leaders and communities. Current procedures for identifying these critical habitats in Sierra Leone include consulting the appropriate EPA.

11. -*Conservation of biodiversity* – Clearing of lands and infrastructure rehabilitation that lead to loss of biodiversity and deforestation through physically removing species will be avoided by this project. Intervention will happen at early in the planning process by prioritizing rehabilitation and use of abandoned lands, which will lead to the biodiversity restoration.

12. -C*limate Change* - The project will not generate significant and / or unjustified increase in greenhouse gas emissions or any other cause of climate change. Climate resilient rice and cocoa value chain will contribute in avoiding and sequestrating CO2. The climate and environment specialist engaged at inception and during the design and implementation of the programme, will monitor and manage clearing and burning (greenhouse gases) as an alternative and if required will be addressed early in the project.

13. *Pollution Prevention and Resource Efficiency* – The project will work to reduce waste generation and ensuring slash and burn, or release of pollutants into the environment is minimal. Fertiliser and agro agrochemicals use is limited in Sierra Leone but for rice farmers it is made available by MAFFS through a one bag for two bushels of rice basis. Farmers receive FFS training in agrochemical use although interviews with District Agricultural Officers (DAOs) revealed that farmers are still over-applying fertilisers and applying them at the wrong time, for example on already green rice instead of growing shoots in the mistaken belief that this will further improve rice productivity, instead of damaging

14. *Physical and Cultural Heritage* – The project will avoid the alteration, damage, or removal of any physical cultural resources, cultural sites, and sites with unique natural value, recognized. During site assessments, traditional leaders will be consulted to make sure any cultural sites and sites with unique natural values are identified. Prior to any modification of any site, a letter of verification will need to be received from the highest authority with the endorsement of the

traditional leaders that a proposed activity will not interfere with any cultural site or site of unique natural value.

15. *Lands and soil conservation* – Where land is to be modified for example farmlands that may cause soil erosion or deforestation, standards will be followed to maintain the land in its natural state or as close to its natural state as is possible; and, if land is to be converted, it must promote and protect its current function

140. The environmental and social management plan (ESMP) developed as part of the project design includes more detailed information on identified potential environmental and social impacts, their significance, mitigation measures and responsible parties for ensuring the risks are monitored and mitigated as and if they materialize. These are:

Table 9: Environmental (incl. Climate Change) Management Plan and related Adaptation Fund's 15 Principles, including mitigation measures and responsible stakeholders

Impact	Significance Rating (likelihood x consequence)	Extent / Prevalence	Recommended Mitigation	Responsibility for implementing mitigation	Means of verification	Timing / frequency of verification
ENVIRONMENTAL MITIGATION PLAN And RELATED 15 Principles (ESS)						
Deforestation and upland crop production Expanding tree crop plantations as a result of project activities could result in direct or indirect deforestation. Related AF 15 principles: Lands and Soil Conservation Physical and Cultural Heritage; Climate Change; Conservation of Biological Diversity; Marginalized and Vulnerable Groups, Core labour rights	High	All districts	▪ Strongly discourage new oil palm and cocoa plantation in and around virgin forest and forest regrowth areas ▪ Strong emphasis to be placed on rehabilitation of existing and abandoned oil palm and cocoa plantations ▪ Limit approval cocoa plantations to already degraded land/degraded secondary bush areas or deforested areas ▪ Strengthen participation in the processing and marketing value chains to create more jobs especially for women ▪ Strengthen partnership with the forestry department to train farmers in sustainable agroforestry ▪ Carry out regular mapping of plot sites and monitoring of land use and forest cover by third party contractors.	NPCU and District MAFFS, Service Providers	▪ Percent decline in forest cover ▪ Number of people engaged in the processing and marketing value chains ▪ MOU with the forestry department ▪ Number of Training conducted with farmers on agroforestry techniques	Reference/baseline, Mid-term, End-Term Mid-Term, End-Term Mid-Term, End-Term Annual
Biodiversity loss (in IVS), Bush Fires/slash and burn agriculture	Medium	Kambia, Port Loko, Bonthe, Moyamba,	▪ Limit cultivation of rice in the mangrove ecosystem to reduce mangrove forest loss	NPCU and District MAFFS,	▪ Percent decline in mangrove forest ▪ Number of	Mid-Term, End-Term

Related AF 15 principles: Lands and Soil Conservation Physical and Cultural Heritage; Climate Change; Conservation of Biological Diversity; Marginalized and Vulnerable Groups		Pujehun	▪ Discourage slash and burn and train farmers on sustainable land preparation and development options ▪ Avoidance of areas that infringe on known migration patterns of protected, endangered or rare species and maintain known wildlife migration corridor	Service Providers	farmers that received training on sustainable land preparation and management ▪ Biodiversity surveys	Quarterly Annual
Land and soil degradation Related AF 15 principles: Lands and Soil Conservation Related AF 15 principles: Lands and Soil Conservation Physical and Cultural Heritage; Conservation of Biological Diversity Core labour rights;	Medium	All districts	▪ Production of project-specific ESIA by contractors should be required for all feeder roads construction ▪ Train farmers and service providers on sustainable land development and preparation methods including zero or minimum tillage. ▪ Encourage crop intensification and discourage opening of virgin forest for cropping. ▪ As much as practicable, encourage mixed cropping of target crops with cover crops and anchor crops (especially for oil palm at early stage) ▪ Involve partners from the Ministry and research institutes in training farmers on soil conservation techniques	NPCU and District MAFFS, Service Providers	▪ Production of project-specific ESIA for feeder road construction ▪ Number of farmers that received training on sustainable land preparation and management ▪ Consummated MOUs with Research Institutes and agencies dealing with soil conservation techniques	Annual Quarterly Mid-Term, End-Term
Water pollution Related AF 15 principles: Pollution Prevention and Resource Efficiency, Public health	Medium	All districts	▪ Minimize use of inorganic fertilizers and encourage use of biodegradable organic manures (especially in rice, maize and vegetable fields) and agrochemicals in cocoa plantations ▪ Consider training youth in	NPCU and District MAFFS, Service Providers	▪ Number of farmers that use organic manure instead of inorganic fertilizer ▪ Number of youth engaged in integrated agrochemicals and	Annual Annual

			sustainable agrochemical application as an enterprise to promote environmental-smart agricultural value chain		pesticides application enterprise	
Wetland (especially mangrove) degradation and removal Related AF 15 principles: Protection of Natural Habitats, Lands and Soil Conservation Physical and Cultural Heritage; Conservation of Biological Diversity, Core labour rights	Medium	All districts	▪ Discourage removal and draining of mangroves for rice paddies and vegetable farming	NPCU and District MAFFS, Service Providers	▪ Percent decline in wetland	Reference/baseline, Mid-term, End-Term Mid-term, End-Term
Erosion and landslide/mudslide	Medium	All districts	▪ Encourage agronomic practices such as contour ploughing, terraces and bunds in erosion and landslide/mudslide prone hill-slope areas ▪ Encourage the planting of cover crops and anchor crops with the main crop ▪ Encourage buffers along river bank to prevent erosion ▪ Design and construction of roads, bridges and culverts to be properly monitored to prevent inappropriate termination that can lead to erosion	NPCU and District MAFFS, Service Providers	▪ No of farmers in erosion/landslide/mudslide prone areas adopting sound and sustainable agronomic practices	Mid-term, End-Term
Flooding (from rivers and possible over flow/collapse of the earthen dam), Water			▪ Improve on the design of earthen dams in IVS using hydrological long-term (50-100 years) flood return periods to	NPCU and District MAFFS, Service Providers	▪ Number of rainy season with no dam overflow ▪ Improved capacity o	Annual Quarterly

logging, soil salinization and alkalization Related AF 15 principles: Lands and Soil Conservation Physical and Cultural Heritage; Conservation of Biological Diversity			improve dam resilience ▪ Sustaining and improving on the partnership with the Meteorological Agency to improve their capacity to generate forecast of extreme rainfall events and disseminate climate information ▪ Consider introducing no regret option including crop insurance as part of the farmers and Agri-entrepreneurs' package ▪ Production of project-specific ESIA by contractors should be required for all feeder roads construction to prevent obstructing IVS drainage areas and causing waterlogging of rice fields ▪ Analyze soils and monitor changes that potential problems can be managed. Allow for access to channels from maintenance in design ▪ Provide water for leaching as a specific operation ▪ Usage of improved materials and improved site selection and design processes. Previously constructed dams that require corrective adjustments will be prioritised.		the Met Office to generate forecast or extreme events ▪ Number of agro-entrepreneurs receiving climate information ▪ Number of farmers that signed off unto agric insurance ▪ Result from soil analysis	Quarterly Annually Biennial
Agrochemical Waste proliferation Water pollution. IVS rice farmers are still over-applying fertilisers and applying them at the wrong time hereby increasing waste	Low	All districts	▪ Consider creating a value chain/service provider in soil testing for fertilizer applications to improve place and context-based fertilizer and agrochemical application ▪ Encourage development and use of improved and resilient	NPCU and District MAFFS, Service Providers	▪ Number of soil testing service providers ▪ Number of farmers using improved and resilient local crop varieties ▪ Number of youth	Annual Annual

and negative environmental impacts. Related AF 15 principles: Pollution Prevention and Resource Efficiency, Public health, Climate Change			local crop varieties to reduce pest resistance and use of agro-chemical ▪ Training youth in sustainable application of agrochemicals enterprise as part of the value chain ▪ Encourage use of organic manures ▪ Service providers and agro-chemical input suppliers to follow high standard of security and safety precautions in storage and transport of agrochemicals ▪ Train a lead farmer per community to educate and monitor his or her community members on how to correctly apply fertilisers to reduce crop damage and fertiliser waste, reduce indirect GHG emissions and improve productivity.		trained and engaged in integrated pesticide and agrochemicals management as par of value chain ▪ Number of trained and certified agrochemical suppliers	Annual
Dry spell and Increase storm and wind activity Related AF 15 principles: Lands and Soil Conservation, Climate Change;	Moderate	All districts	▪ Sustaining and improve on partnership with the Meteorologica Agency to improve their capacity to generate and disseminate agriculture-specific forecasts to farmers in good time through additional weather stations (to the 4 acquired through the GAFSP) and other appropriate weather data collection tools especially in the rural interiors ▪ Improve the capacity of the Meteorological Agency to collate and process climate data through appropriate Hardware, Software and mobility support	NPCU and District MAFFS, Service Providers	▪ Number of additiona weather station supported/establishe d by the AVDP ▪ Central data processing server and mobility support for the Met Office ▪ Regular issuance of agro-climatic forecasts issued by the Meteorological Agency ▪ Number of farmers receiving and using climate information	Annual Once Quarterly Quarterly Annual

			▪ In addition to agric extension officers, engage other means including farmers organization forum, community radios, text messages, transmitter broadcast (in remote areas) to disseminate weather and climate information to farmers (possibly in local languages) ▪ Integrate use of traditional forecasting knowledge through regular feedback from farmers ▪ Consider introducing no regret option including crop insurance as part of the farmers and Agri-enterpreneurs' package ▪ deliver training and agricultural inputs in good time to assist farmers to adjust and adapt their planting and harvesting methods and timing		▪ Number of entrepreneurs that signed on to agricultural insurance ▪ Number of feedbacks from farmers/farmers organization on climate information	Quarterly
GHG emissions from rice paddies Related AF 15 principles: Lands and Soil Conservation Climate Change;	Moderate	All districts	• Discourage opening of new virgin forests and coastal mangrove wetlands • Train farmers on how to drain rice paddies in mid-season to reduce CH4 emission and improvement in nutrient management including the retention of rice residues • Encourage use of clean energy in processing activities	NPCU and District MAFFS, Service Providers	▪ Percent decline in forest and wetland areas ▪ Number of farmers trained in sustainable rice paddies management ▪ Number of processing units using sustainable energy	Reference/baseline, Mid-term, End-Term Annual Reference/baseline, Mid-term, End-Term
Waterlogging of rice fields The rehabilitation of feeder roads could if not well done cause obstruction of drainage	Moderate	All districts	• Integration of Environment and Social Safeguard's into all rehabilitation works, climate proofing infrastructures, integration in the DOA • ESIAs will be conducted in	Ministry of public works and transport, EPA, ministry of Environment, NPCU	▪ Reports and work plans, Impact assessments report	Quarterly

systems. Related AF 15 principles: Access and equity Human rights Physical and Cultural Heritage, Core labour rights, involuntary resettlement, Public Health, land and soil conservation			accordance with EPA procedures to ensure planned activities such as culverts are included in the design and implementation of the feeder roads. The EPA will also be invited and supported to conduct supervision of construction			
SOCIAL MITIGATION PLAN						
Land tenure issues – role of paramount chiefs Related AF 15 principles: Lands and Soil Conservation Climate Change; Access and equity Gender Equality and Women Empowerment, Human rights	High	All districts	▪ Advocate for the implementation of the new land policy to guarantee land tenure security for beneficiary farmers ▪ Massive sensitization across the districts and chiefdoms on land tenure and access to land for AVDP intended beneficiaries ▪ Engage with Paramount Chiefs to secure land for intending beneficiaries with no access to land ▪ Make access to land by women and youth one of the preconditions for a community to participate in the AVDP ▪ The project (through the NPCU and District MAFFS) to sign land guarantee and documented lease agreements with land owners for 10-25yeras for intending beneficiaries without access to land	NPCU and District MAFFS, Service Providers	Number of women and youth participating in AVDP (from the project register Number of people without access to land participating in AVDP Secure land access and number of land lease agreement signed with land owners Attendance register of sensitization meetings with Paramount chiefs and other stakeholders	Quarterly Quarterly Every six months At every project activity
Gender inequality and targeting	High	All districts	▪ Spend enough time (at least 2-3months) for mobilization on targeting to reach everybody at	NPCU and District MAFFS, Service Providers	Minutes and Attendance register at community	At targeting mobilization

Related AF 15 principles: Lands and Soil Conservation Climate Change; Access and equity Gender Equality and Women Empowerment, Human rights			community meetings (Do not leave selection of beneficiaries to the paramount Chiefs). Use the local media as well as local trusted NGOs ▪ Encourage active participation of women in the AVDP up to 40% as indicated in the PDR ▪ Engage women organizations and advocacy and right groups to mobilize women to participate ▪ Give some concessions/incentives to women farmers to enable them participate ▪ Encourage men through advocacy to support women participation through guarantee o land and other resources required		meetings Number of women and youth participating in AVDP (from the project register Number of women advocacy groups working with AVPD	meetings Quarterly Annually
Social exclusion of women and youth due to limited access to land. Gender inequality in Sierra Leone is one of the worst globally. Women have no land rights, and men typically manage tree crops. Related AF 15 principles: Lands and Soil Conservation Climate Change; Access and equity Gender Equality and Women Empowerment, Human rights	High	All districts	▪ Actively involve women and youth in all components and levels of decision-making within the project; ▪ Strive to maintain Project beneficiaries ratio of 40% women and 20% youth (men and women under 35 years old) ▪ Encourage the submission of business proposals from women-only groups (incl. cooperatives); ▪ Female-headed households with recognised access entitlement to farm tree crops as primary farmers should comprise 30 per cent of the selected beneficiaries. ▪ 10% of the female quota should	NPCU and District MAFFS, Service Providers	Attendance lists Lists of approved projects and their beneficiaries Membership and staff lists Attendance lists at sensitization workshops and beneficiary / community feedback during site visits Community	At every project activity At business plan approval and every six months thereafter Every six months At every project activity Annual

			be for vulnerable women without recourse to necessary land security needed for tree crop farming ▪ Youth inclusion should be 20 per cent of the selected community beneficiaries and they should be granted inheritance rights to be recognised as primary tree crops farmers. Their roles should be as primary farmers, not as assistants or as paid casual labour, and the youth farmers should be designated by their families as the farm owners. ▪ Ensure women hold at least 30-40% of leadership posts in the farmer apex organizations and project management team; ▪ When organizing meetings or events, ensure they are appropriate to women's time and venue constraints; ▪ Access to land for women and youth should be a precondition for community selection/participation ▪ To avoid obstructionism ('blocking behaviour'), ensure men are included ('carried along') in sensitization activities. Work with locally-trusted CSOs in community sensitization (working towards 'attitudinal change') ▪ Make road and dam construction contractors to hire labour form the local		agreement on lan access for women an youth Number of communit youth engaged a labour in road an dam construction an farm track rehabilitation	

			communities to increase sense of belonging and participation ▪ Consider using local labour for farm tracks construction and rehabilitation instead of machines to increase number of indirect project beneficiaries			
Managing expectations Related AF 15 principles: Lands and Soil Conservation Climate Change; Access and equity Gender Equality and Women Empowerment, , Human rights Marginalised and vulnerable groups	High	All districts	▪ The AVDP project targeting and up scaling mechanism should be explicitly and transparently explained in the project implement manual (PIM) ▪ Selection criteria, what the project offers and expectations from intended beneficiaries should be explicit and unambiguous (and translated into the local languages so that everybody will be carried along) ▪ Carry the community and agro-entrepreneurs representatives along in the project implementation (and possibly the Paramount Chiefs or their representatives) in every stage of project implementation ▪ Maintain robust knowledge management and information dissemination to keep everybody abreast of happenings	NPCU and District MAFFS, Service Providers	Project implementation manual Project selection criteria in local languages Knowledge management and communication material	Before project commencement 6months into project Quarterly
Increased labour demand could result in the inappropriate use of child labour. Related AF 15 Principle:	Low	All districts	▪ The youth target group is 18-34 years. Children younger than 18 will be excluded from taking part in project activities.	NPCU and District MAFFS, Service Providers	Contractor Guidelines Agreement document	

Core Labor Rights						
Unsafe and non-healthy working conditions Related AF 15 principles: Pollution Prevention and Resource Efficiency, Public health	Medium	All districts	▪ Incorporate environmental and social guidelines in contracts with service providers and ensure compliance; ▪ Sensitize project beneficiaries and their wider communities on health & safety standards, incl. safe use of production, processing and transport machinery, agro-chemicals (pesticides and fertilizer), electrical installations and wiring (in particular in wet areas / during rains; ▪ Sensitization of selected communities on child rights and ensure that there is no child labour on selected agri-enterprise projects.	NPCU and District MAFFS, Service Providers	Contractor Guidelines Health & Safety flyer or poster Community meeting Community meeting	☐ Within 6 months of project start and half-yearly review thereafter ☐ Within 6 months of project start, half-yearly thereafter ☐ Within 6 months of project start and half-yearly review thereafter ☐ Within 6 months of project start, half-yearly thereafter
Elite capture Related AF 15 principles: Social consideration, compliance with law, Access and equity Gender Equality and Women Empowerment, Human rights	Medium	All districts	▪ Detailed screening of business plan proposals on commercial viability, conflicts of interest and corruption. Exclude (use of) service providers owned by/tied to politicians or political parties; ▪ Ensure compliance with pre-approved, objective selection criteria and transparent information-sharing and decision-making ▪ Sensitize communities on project objectives, target groups, beneficiary selection criteria, and ▪ risk of elite capture ('hijack'); ▪ Agreement with traditional rulers and council	NPCU and District MAFFS, Service Providers	Completed proposal screening forms Review missions Item on steering committee agenda Community meeting Agreement documen	▪ During half-yearly review missions ▪ During half yearly committee meetings ▪ Monthly during first months, quarterly thereafter ▪ Within 6 months of start of project

			of elders on community and beneficiary selection, and adherence to representative and transparent decision-making related to the project (via letter of understanding, MoU or another appropriate format). Involve locally-trusted CSOs.			
Loss and Disturbance of Cultural Resources such as sacred forest and archeological site Related AF 15 principles: Lands and Soil Conservation Physical and Cultural Heritage; Conservation of Biological Diversity	Low	All district	▪ Do not approve projects to located in or around sacred forests and community groves and archaeological sites	NPCU and District MAFFS, Service Providers	Inventory of cultural resources	▪ Annual
Conflict resurgence Related AF 15 principles: Social consideration, compliance with law, Access and equity Gender Equality and Women empowerment, Human rights	Medium	All districts	▪ Maintain robust knowledge management, information dissemination and community engagements to keep everybody informed ▪ Develop a clear complaints, grievances redress and dispute resolution framework and make this known to all stakeholders ▪ Develop a clear and simple stakeholder engagement plan (SEP) (incl. communication/outreach strategy), particularly on project objectives and staffing (incl. who's responsible for what), criteria for community and beneficiary selection, community–project	NPCU and District MAFFS, Service Providers	Stakeholder engagement plan (SEP) Stakeholder meeting reports, project flyers Complaints register Meeting records, observation Service provision contract and	Within 2 months of start of project Quarterly Quarterly At every project activity Upon award of contracts and after payments Within 6 months of

			communication structure / methods, and grievance/conflict management; ▪ Keep relevant stakeholders informed about project progress on a regular basis; ▪ Involve youth and women leaders as well as respected elders in key project decisions and sensitization activities; ▪ Publicly disclose relevant information on contracts and payments; ▪ Encourage contractors / service providers to give employment preference to local community members ▪ Develop a code of conduct for all stakeholders ▪ Sensitize women and particularly youth on what it's like to be an agri-entrepreneur (give a realistic picture of economic, social and environmental benefits but also challenges and responsibilities). ▪ Involve locally-trusted CSOs in community sensitization ▪		employment lists Code of conduct Community meeting Knowledge management materials Number of local CSOs in partner with AVDP	project start At every project activity during first 6 months, quarterly thereafter Quarterly Annually
Health						
Water borne diseases Related AF 15 principles: Pollution Prevention and Resource Efficiency, Public health	Medium	All districts, especially in the Inland Valley Swamp	▪ Efforts to focus on inland valley swamp to protect farmers from schistosomiasis, a water-borne disease in flooded rice fields, with rice boots and medication	NPCU and District MAFFS, Service Providers	Sensitization materials Number of farmers using rice boots	▪ Annual
Dust from road construction	Medium	All districts	▪ Road contactors to present an	NPCU and	Number of ESIA for	Quarterly

Related AF 15 principles: Pollution Prevention and Resource Efficiency, Public health			Environments and Social Impact Assessment with Management Plan for managing externalities as part of the bidding processing ▪ Consider using the Autoseal technology (a polymer based technology which hardens and can last for 5 years or more) to help tackle the dust inhalation problem	District MAFFS, Rural Infrastructure Engineer, contractors / Service Providers	road rural feeder road projects	

141. The EPA checklist will also be used to ensure that planning permissions and decisions comply with Government environmental and social approval processes. Updating of ESMP and a decision as to whether an EIA is required will be the final step. Additional to these processes, the following Committees will be responsible for confirming each of the sub projects and monitoring implementation of the USP's. The initial actions during pre-inception will involve coordination of the roles and responsibilities of those involved in managing these risks with the ESS specialist taking the lead role with supporting role from the Gender and M&E specialists.

142. The potential environmental and social risks posed by the project are limited and constrained to feeder road rehabilitation, rice production, small-scale irrigation and drainage, fertiliser usage and agricultural rehabilitation of cocoa and oil palm. The project will not have any negative impacts such as the involuntary taking or restriction on the use of land resulting in physical or economic displacement or negatively affect indigenous peoples or sites of historic, religious or cultural significance. The project is rated as a 'category B' project according to IFAD's Social, Environmental and Climate Assessment Procedures (SECAP), which means that no formal Environmental and Social Impact Assessment (ESIA) will be required. Further analysis and an environmental management plan will however be mainstreamed throughout project design and implementation and be largely covered by the Adaptation Fund funded activities.

Grievance Mechanism

143. Whenever a project causes negative environmental or social impacts there will be grievances (complaints) from people who are affected. "Having a good overall community engagement process in place and providing access to information on a regular basis can substantially help to prevent grievances from arising in the first place, or from escalating to a level that can potentially undermine project performance[24]. In order to reduce conflicts, a robust grievance/complaints mechanism that meets at least the following 'effectiveness' criteria should be instituted[25]:

a. *Legitimate*: enabling trust from the stakeholder groups for whose use they are intended, and being accountable for the fair conduct of grievance processes;
b. *Accessible*: being known to all stakeholder groups for whose use they are intended, and providing adequate assistance for those who may face particular barriers to access;
c. *Predictable*: providing a clear and known procedure with an indicative time frame for each stage, and clarity on the types of process and outcome available and means of monitoring implementation;
d. *Equitable*: seeking to ensure that aggrieved parties have reasonable access to sources of information, advice and expertise necessary to engage in a grievance process on fair, informed and respectful terms;
e. *Transparent*: keeping parties to a grievance informed about its progress, and providing sufficient information about the mechanism's performance to build confidence in its effectiveness and meet any public interest at stake;
f. *Rights-compatible*: ensuring that outcomes and remedies accord with internationally recognized human rights;
g. A source of *continuous learning*: drawing on relevant measures to identify lessons for improving the mechanism and preventing future grievances and harms;
h. Based on *engagement and dialogue*: consulting the stakeholder groups for whose use they are intended on their design and performance, and focusing on dialogue as the means to address and resolve grievances.

[24] IFC (2007) Stakeholder Engagement, p.69 and p.72

[25] Office of the High Commissioner on Human Rights (OHCHR) (2011), *UN Guiding Principles on Business and Human Rights*(OHCHR: Geneva), pp.33-34

144. IFAD has established a Complaints Procedure to receive and facilitate resolution of concerns and complaints with respect to alleged non-compliance of its environmental and social policies and the mandatory aspects of its Social, Environmental and Climate Assessment Procedures in the context of IFAD-supported projects. The procedure allows affected complainants to have their concerns resolved in a fair and timely manner through an independent process. Although IFAD normally addresses potential risks primarily through its enhanced QE/QA process and by means of project implementation support, it remains committed to: (i) working proactively with the affected parties to resolve complaints; (ii) ensuring that the complaints procedure is responsive and operates effectively; and (iii) maintaining records of all complaints and their resolutions[26].

145. The AF Project will as much as possible utilize every available grievances redress mechanisms including: associations (including farmers' associations/organizations) traditional council (Paramount Chiefs and elders), village square engagement (consisting of representatives of men, women and social groups), village general assembly, the project NCPU, etc.

D. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan

146. Project Monitoring and Evaluation (M&E) and Knowledge management will be under the oversight of the NPCU, and led by the M&E officer who will work closely with the implementing partners. The M&E system should: (i) produce, organize and disseminate the information needed for the strategic management of the Project, (ii) document the results and lessons learned for internal use and for public dissemination on the achievements and (iii) respond to the information needs of Adaptation Fund, IFAD and the Government on the activities, immediate outcomes and impact of the Project. A monitoring and evaluation manual that will describe a simple and effective system for collecting, processing, analysing and disseminating data will be prepared in the first year of the Project.

147. A computerized database will be developed that will enable the generation of dashboards used in IFAD projects. The system will be regularly fed from data collected in the field by the implementing partners and the various studies carried out as part of the projects' implementation. The monitoring and evaluation system will be coupled with a geo-localized information system (GIS) that will allow mapping and spatial-temporal analyses. Trainings will be organized to strengthen the capacities of the various stakeholders involved in the monitoring and evaluation system.

148. Project M&E activities will be guided by the following key considerations:

a) Data will be disaggregated by poverty, livelihood group and gender;
b) Each implementing or partner agency will have clear M&E responsibilities with specific reporting deadlines and a forum for presenting and discussing the findings of the monitoring exercise; and
c) M&E will be linked to the project rationale, log frame, and annual work plans and budgets. M&E findings will be used to take corrective or enhancing measures at the level of project management.

149. The project key M&E activities will include the following:

150. **Project Inception Workshop.** A Project Inception Workshop will be conducted within two months of project start up with the full project team, relevant government counterparts and IFAD. The Inception Workshop is crucial to building ownership for the project results and to plan the first-year annual work plan. A fundamental objective of the Inception Workshop will be to present the modalities of project implementation and execution, and assist the project team to understand and take ownership of the project's goals and objectives. An Inception Workshop Report will be prepared and shared with participants.

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[26] IFAD (2016) *Managing Risks to Create Opportunities. IFAD's Social, Environmental and Climate Assessment Procedures (SECAP)* (IFAD: Rome), p.12

151. **Reporting.** In the first and sixth year of the Project, a MPAT/SYGRI+ survey that also incorporates the information needs of the project logical framework will be conducted. MPAT, a multidimensional poverty assessment tool, is a recently developed IFAD tool that assesses poverty in ten dimensions that are at the heart of rural livelihoods.

152. Semi-annual and Annual Project Reports will be prepared by the NPCU and verified by the PSC to monitor progress made since project start and in particular for the previous reporting period.

153. These reports include, but are not limited to, reporting on the following:

- Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative);
- Project outputs delivered per project outcome (annual);
- Lessons learned/good practices;
- Annual expenditure reports; and
- Reporting on project risk management.

154. Quarterly Progress Reports will also be prepared by project implementing partners in the field, and submitted to the NPCU to ensure continuous monitoring of project activities and identify challenges to adopt necessary corrective measures in due time.

155. Technical reports – such as a best practices and lessons learned report - will also be completed, as determined during the project inception report.

156. A Terminal project report will also be completed at least two months before project closure.

157. **Financial Reporting.** In terms of financial monitoring, the project team will provide IFAD with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of funds according to the established procedures.

158. **External Evaluations.** The project will undergo an independent external Mid-Term Evaluation at the mid-point of project implementation, which will determine progress being made toward the achievement of outcomes and identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project term.

159. A Final Evaluation will be conducted 3 months before project closure.

160. **Field visits.** Government authorities, members of PSC and IFAD staff will conduct regular field visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress.

Knowledge management and KM culture: and lack of country level M&E framework for measuring the results and contributions towards the Agenda 2030 will be promoted . Over the past year IFAD has moved towards a country programme approach in Sierra Leone with dedicated M&E resources and has provided capacity building support in the areas of monitoring, analysing results and documenting lessons learned for greater knowledge management. The project will strengthen the existing structure of the M&E Unit in the National Project Coordination Unit (NPCU) to monitor outcomes in concert with the Project Monitoring and Evaluation and prepare a clear KM and implement it throughout the entire project cycle and beyond.

161. The proposed M&E budget is as follows:

Table 10: Breakdown of how IE fees will be utilised in the supervision and M&E function

IE Fees Breakdown of M&E Supervision	Responsibility	Budget (USD)	Timeframe
Supervision visits	IFAD, NPCU, Government	23,000	bi-annually

Training workshops on M&E	IFAD, NPCU	21,000	2018
Baseline survey/ MPAT/SYGRI+ survey	NPCU	30,000	First Year (2018) Sixth Year (2024)
Mid-Term Evaluation	IFAD, External consultants	36,000	2021
Final Evaluation	IFAD, External consultants	36,000	2024
Knowledge Management Activities and Publications	IFAD, NPCU	27,793	bi-annually
Total		**173,793**	**6 years**

E. Include a results framework for the project proposal, including milestones, targets and indicators

Table 11: Project Results Framework

Project Objective(s)[27]	Project Objective Indicator(s)	Baseline	Target	Means of Verification	Risks and Assumptions
Overall objective: Enhancing smallholder farmers and rural population's resilience to climate change					
Enhancing smallholder farmers and rural population's resilience to climate change	**AF Core indicator: Number of beneficiaries (direct and indirect)**	**0**	**35,000 direct beneficiaries, including 40% women and 40% youth** **X indirect beneficiaries**	- Project M & E reports - Progress reports - Mid-term and final project evaluations	Political and economic stability in Sierra Leone.
	- Number of smallholder farmers living below poverty line.	**35,000**	**0**	- Project M & E reports - Progress reports - Mid-term and final project evaluations	Political and economic stability in Sierra Leone.
	- Number of smallholder farmers reporting improvements in their living conditions.	**0**	**35,000**	- Project M & E reports - Progress reports Mid-term and final project evaluations	Political and economic stability in Sierra Leone.
Project Outcome(s)	**Project Outcome Indicator(s)**	**Baseline**	**Target**	**Means of Verification**	**Risks and Assumptions**
<u>Component 1: Climate-proofed agricultural value-chain and climate-resilient livelihood diversification</u>					
The cocoa and rice value-chains are resilient to future climate change impacts and smallholders' incomes are	- Number of farmers reporting more diverse income sources.	0	60% of farming households (in project area)	- Project M & E reports - Progress reports - Mid-term and final project evaluations	Political and economic stability in Sierra Leone.
	- Number of farmers reporting an increase in cocoa	0	85% of farming households (in project area)		

[27] The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

diversified	productivity.				
	- Number of farmers reporting an increase in rice productivity.	0	85% of farming households (in project area)		
	- Number of farmers adopting climate-resilient farming practices	0	60% of farming households (in project area)		
	- Number of cocoa and improved rice nurseries established	0	**100**		
	- Number of cocoa and improved rice seeds distributed	0	**100**		
	- Number of earth dams constructed	0	40		
<u>Component 2: Climate resilient rural transportation and water infrastructure</u>					
Climate-proofed rural transportation, water and storage infrastructures	- Number of farming households having access to a potable water supply	**To be determined**	**20,000**	- Project M & E reports - Progress reports - Mid-term and final project evaluations	Political and economic stability in Sierra Leone.
	- Number of kilometers or rural roads and feed roads climate proofed	0	120		
	- Number of hectares of land irrigated from earth dams	0	1000ha		
	- Number of warehouses rehabilitated	0	**100**		
	- Number of water user groups adopting sustainable irrigation practices	0	60% of farming households (in project area)		

Component 3: Institutional capacity development and policy engagement					
Supported meteorological institutions provide improved climate services to smallholder farmers and rural populations	- Number of staff of the EPA and meteorological department trained.	0	Two technicians trained by PY1. Two meteorologists trained by PY3. 24 staff completed the training (12 by PY 1 and 12 by PY3).	- Project M & E reports - Progress reports - Mid-term and final project evaluations	Political and economic stability in Sierra Leone.
	- Number of sectoral policies integrating climate change risks (thanks to the training provided by the project)	0	At least 1		

F. Demonstrate how the project / programme aligns with the Results Framework of the Adaptation Fund

162. The table below demonstrates how the project aligns with the Results Framework of the Adaptation Fund.

Table 12: Project alignment with the result framework of the Adaptation Fund

Project Objective(s)[28]	**Project Objective Indicato**	**Fund Outcome**	**Fund Outcome Indicator**	**Grant Amount (USD)**
Overall objective: Enhancing smallholder farmers and rural population's resilience to climate change				
Enhancing smallholder farmers and rural population's resilience to climate change	- Number of smallholder farmers living below poverty line. - Number of smallholder farmers reporting improvements in their living conditions.	**Outcome 1:** Reduced exposure to climate-related hazards and threats	1.2.1. Percentage of target population covered by adequate risk-reduction systems	**9,916,925**
Project Outcome(s)	**Project Outcome Indicator(s)**	**Fund Output**	**Fund Output Indicator**	**Grant Amount (USD)**
<u>Component 1: Climate-proofed agricultural production and post-harvest combined with livelihood diversification</u>				
The cocoa and rice production and post-harvest are resilient to future climate change impacts and smallholders' incomes are diversified	- Number of farmers reporting more diverse income sources. - Number of earth dams constructed	**Output 6:** Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability	6.2. Percentage of targeted population with sustained climate-resilient alternative livelihoods	414,761
	- Number of farmers reporting an increase in cocoa productivity. - Number of farmers reporting an increase in rice productivity. - Crop yield change in target areas No of target farmers adopting climate resilient farming practices - Number of cocoa and improved rice nurseries established	**Output 5:** Vulnerable ecosystem services and natural resource assets strengthened in response to climate change impacts, including variability Vulnerable households have	5. Ecosystem services and natural resource assets maintained or improved under climate change and variability-induced stress Nutrition and food security ensured during the dry	5,967,179

[28] The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

	- Number of cocoa and improved rice seeds distributed - Number of Fish farms and Community gardens established as alternatives source of financing	access to better nutrition and food security , source of income during the dry season	season	
Component 2: Water control, security and management measures				
Rural transportation and water infrastructure designed and developed to withstand climate change	- Number of farming households having access to a potable water supply - Number of elevated reservoirs constructed - Number of hectares of land irrigated from earth dams - Number of water user groups adopting sustainable irrigation practices. - Number of latrines constructed - Number of warehouses rehabilitated	**Output 4:** Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability	4.2. Physical infrastructure improved to withstand climate change and variability-induced stress 4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by sector and scale)	**1,613,352**
Component 3: Institutional capacity development and policy engagement				
Supported meteorological institutions provide improved climate services to smallholder farmers and rural populations	- Number of meteorological stations installed. - Number of staff of the EPA and meteorological institute trained. - Number of sectoral policies integrating climate change risks (thanks to the training provided by the project)	**Output 2**: Strengthened capacity of national and subnational centres and networks to respond rapidly to extreme weather events	2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events (by gender) 2.1.2 No. of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale)	**967,035**

G. Include a detailed budget with budget notes, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs

163. The table below presents the detailed budget of the project per activity.

Table 13: Detailed budget per project activity

Component 1: Climate-proofed agricultural production and post-harvest combined with livelihood diversification	
Sub-component 1.1: Climate-proofing agricultural production and post-harvest	
1. Support to MAF to run Farmer Field School (FFS)	1,530,902
2. Establishment of Cocoa Clonal Garden at SLARI	481,950
3. Support to Cocoa Clonal Garden Operation	160,650
4. Development of Cocoa farms	979,072
5. Bore holes irrigation scheme	309,162
6. Development of new IVS (rice)	2,505,443
Sub-total (1.1)	**5,967,179**
Sub-component 1.2 : Promotion of income-generating activities as livelihood diversification measures	
1. Construction of the Earth Dams and community integrated vegetable gardens with solar systems	304,342
2. Establishment of fish farms	110,419
Sub-total (1.2)	**414,761**
Cost for Component 1	**6,381,940**
Component 2: Climate resilient rural transportation, storage and water infrastructure	
Sub-component 2,1: Climate resilient rural transportation and storage infrastructure	
1. Warehouse rehabilitation to withstand weather extremes	57,124
2. Climate proofing of 120 feeder roads	**593,046**
· Studies and surveys for rehabilitation	19,619
· Rehabilitation works	446,503
· Construction of bridges (for rehabilitation)	45,226
· Routine maintenance	11,579
· Periodic maintenance	70,119
3. Climate proofing of farm tracks: Studies and surveys for construction	**31,596**
4. Support to districts for development of Feeder Road Maintenance Plans	**30,466**
5. Support to FBOs	**45,782**
· Road gangs formation (distribution of maintenance tools)	30,848
· Development of Farm Tracks Maintenance Plans	14,934

Sub-total (2.1)	**758,014**
Sub-component 2.2: Climate-resilient water supply & sanitation infrastructure	
· Climate proofing of water supply and sanitation infrastructure	726,026
· Capacity building for potable water management	115,242
Sub-total (2.2)	**841,268**
Cost for Component 2	**1,599,282**
Component 3: Institutional capacity development and policy engagement	
Sub-component 3.1: Strengthening of governmental capacities for climate change adaptation	
1. Strengthening of EPA	**406,076**
· Capacity building through technology enhancement	232,227
· Training to enhance institutional capacity	89,335
· Exchange visits for EPA staff	84,514
2. Development MRV system of climate response programmes	**89,318**
3. Strengthening of Meteorological Department	**75,92**
· Capacity building through technology enhancement	44,659
· Training to enhance institutional capacity	31,261
4. Technical Assistance for improved policy frameworks	**54,655**
· TA to mainstream climate risk into sectorial strategies	54,655
Sub-total (3.1)	**625,969**
Sub-component 3.2: Monitoring and evaluation and coordination of the adaptation activities	
1. Monitoring and Evaluation and Knowledge management	**63,816**
· Baseline survey costs (related to CC adaptation)	10,508
· Terminal survey costs (related to CC adaptation)	10,508
· Case studies and Knowledge management	42,800
2. Personnel	**286,816**
· Adaptation Specialist (transversal)/ Gender Specialist	182,233
· Staff training - adaptation issues	104,583
Sub-total (3.2)	**350,632**
Cost for Component 3	**976,601**
Project execution costs (2%)	
Recruitment of local staff	182,000
Total project execution costs	**182,200**
Total project cost	**9,140,023**
Project cycle management fee (8,5%)	
Total project cycle management fee	**776,902**
Amount of Financing requested	**9,916,925**

Project disbursement matrix

Outputs	Activity	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Component 1: Climate-proofed agricultural production and post-harvest combined with livelihood diversification.						
Output 1.1: Adaptation measures to foster the resilience of cocoa and rice production and post-harvest are implemented)	Output 1.1:	**367,179**	**955,000**	**2,350,000**	**1,100,000**	**955,000**	**240,000**
	1. Support to MAF to run Farmer Field School (FFS)	**27,179**	**95,000**	**100,000**	**90,000**	**120,000**	**30,000**
	2. Establishment of Cocoa Clonal Garden at SLARI	**80,000**	**150,000**	**200,000**	**150,000**	**120,000**	**20,000**
	3. Support to Cocoa Clonal Garden Operation	**75,000**	**105,000**	**300,000**	**210,000**	**180,000**	**40,000**
	4. Development of Cocoa farms	**55,000**	**255,000**	**600,000**	**400,000**	**250,000**	**70,000**
	5. Bore holes irrigation scheme	**60,000**	**150,000**	**400,000**	**250,000**	**150,000**	**40,000**
	6. Development of new IVS (rice	**70,000**	**200,000**	**750,000**	**300,000**	**135,000**	**40,000**
Output 1.2. Income-generating activities (fish farming) are promoted as alternative adaptation measures	Output 1.2.	**25,200**	**54,761**	**151,000**	**84,300**	**74,000**	**25,500**
	1. Construction of the Earth Dams and community integrated vegetable gardens with solar systems	**15,000**	**30,000**	**90,000**	**50,000**	**40,000**	**25,500**
	2. Establishment of fish farms	**10,200**	**24,761**	**61,000**	**44,300**	**34,000**	**20,000**
	Component 2: Climate resilient rural infrastructure						
Output 2.1. Rural transportation and storage infrastructures have been rehabilitated and upgraded to withstand weather extremes	Output 2.1.	**75,800**	**144,000**	**213,914**	**148,000**	**150,000**	**26,300**
	2. Establishment of fish farms	**25,800**	**44,000**	**50,000**	**48,000**	**50,000**	**6,300**
	2. Climate proofing of 120 feeder roads	**20,000**	**50,000**	**73,914**	**50,000**	**50,000**	**10,000**
	- Studies and surveys for rehabilitation	**10,000**	**5,000**	**13,914**	**5,000**	**10,000**	**0**
	- Rehabilitation works	**0**	**15,000**	**10,000**	**15,000**	**15,000**	**10,000**
	- Construction of bridges (for rehabilitation)	**10,000**	**20,000**	**30,000**	**30,000**	**15,000**	**0**
	- Routine maintenance	**0**	**5,000**	**10,000**	**0**	**5,000**	**0**
	- Periodic maintenance	**0**	**5,000**	**10,000**	**0**	**0**	**0**
	3. Climate proofing of farm tracks: Studies and surveys for construction	**15,000**	**20,000**	**50,000**	**30,000**	**50,000**	**0**
	4. Support to districts for development of Feeder Road Maintenance Plans	**5,000**	**10,000**	**10,000**	**10,000**	**20,000**	
	5. Support to FBOs	**10,000**	**20,000**	**30,000**	**10,000**	**30,000**	**10,000**

	- Road gangs formation (distribution of maintenance tools)	**5,000**	**10,000**	**15,000**	**5,000**	**15,000**	**10,000**
	- Development of Farm Tracks Maintenance Plans	**5,000**	**10,000**	**15,000**	**5,000**	**15,000**	**0**
Output 2.2 – Water supply increased and sanitation infrastructure built accounting for current and future climate risks	Output 2.2 –	**55,000**	**127,268**	**310,000**	**215,000**	**101,000**	**33,000**
	Climate proofing of water supply and sanitation infrastructure	**30,000**	**97,268**	**250,000**	**200,000**	**80,000**	**33,000**
	Capacity building for potable water management	**25,000**	**30,000**	**60,000**	**15,000**	**21,000**	**0**
	Component 3: Institutional capacity development and policy engagement						
Output 3.1: Governmental capacities are strengthened for climate change adaptation	Output 3.1:	**52,900**	**134,069**	**202,000**	**163,000**	**54,000**	**20,000**
	1. Strengthening of EPA	**15,000**	**40,000**	**42,000**	**63,000**	**24,000**	**20,000**
	- Capacity building through technology enhancement	**5,000**	**10,000**	**20,000**	**20,000**	**10,000**	**20,000**
	- Training to enhance institutional capacity	**5,000**	**10,000**	**10,000**	**10,000**	**10,000**	**0**
	- Exchange visits for EPA staff	**5,000**	**20,000**	**12,000**	**33,000**	**4,000**	**0**
	2. Development MRV system of climate response programs	**10,000**	**10,000**	**20,000**	**10,000**	**5,000**	**0**
	3. Strengthening of Meteorological Department	**20,000**	**50,000**	**120,000**	**40,000**	**10,000**	**0**
	- Capacity building through technology enhancement	**10,000**	**25,000**	**50,0009**	**25,000**	**0**	**0**
	- Training to enhance institutional capacity	**10,000**	**25,000**	**50,000**	**25,000**	**10,000**	**0**
	4. Technical Assistance for improved policy frameworks	**7,900**	**34,069**	**30,000**	**25,000**	**15,000**	**0**
	- TA to mainstream climate risk into sectorial strategies	**0**	**34,069**	**30,000**	**25,000**	**15,000**	**0**
Output 3.2: Monitoring & Evaluation and Coordination of the Adaptation Activities	Output 3.2:	**48,000**	**50,632**	**100,000**	**80,320**	**50,050**	**21,630**
	1. Monitoring and Evaluation and Knowledge management	**48,000**	**50,632**	**50,000**	**80,320**	**50,050**	**21,630**
	- Baseline survey costs (related to CC	**20,00**	**0**	**0**	**40,320**	**0**	**0**

	adaptation)						
	- Terminal survey costs (related to CC adaptation)	**0**	**10,000**	**0**	**0**	**0**	**21,630**
	- Case studies and Knowledge management	**0**	**20,632**	**50,000**	**20,320**	**25,050**	**0**
	- Staff training - adaptation issues	**38,000**	**20,000**	**50,000**	**20,000**	**25,000**	**0**
Project execution costs	**Project execution costs**	**28,880**	**29,460**	**30,050**	**30,655**	**31,265**	**31,890**
	Adaptation Specialist (transversal)/	**24,000**	**24,000**	**24,000**	**24,000**	**24,000**	**24,000**
	Gender Specialist (consultant)	**4, 880**	**5,460**	**6,050**	**6,655**	**7,265**	**7,890**
Total Project costs		**652,959**	**1,495,190**	**3,356,964**	**1,821,275**	**1,415,315**	**398,320**

H. Include a disbursement schedule with time-bound milestones

Table 14: Project disbursement schedule

	Upon Agreement signature	One Year after Project Start	Year 2	Year 3	Year 4	Year 5	**Total**
Scheduled Date	Aug 2019	Dec 2020	Dec 2021	Dec 2022	Dec 2023	Dec 2023	
Project Funds (US$)	910,000	1,800,200	3,150,000	2,205,023	500,800	574,000	9,140,023
Implementing Entity Fee (US$)	77,350	153,017	267,750	187,427	42,568	48,790	**776,902**
Total (US$)	**987,350**	**1,953,217**	**3,417,750**	**2,392,450**	**543,368**	**622,790**	**9,916,925**

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

1. RECORD OF ENDORSEMENT ON BEHALF OF THE GOVERNMENT[29]

Enter Name, Position, Ministry	Date*:*

2. IMPLEMENTING ENTITY CERTIFICATION

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental, Social Policy and the Gender Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.	
Margarita Astralaga, Director, Environment, Climate, Gender and Social Inclusion Division, IFAD, Implementing Entity Coordinator	
Date: 13 May 2019 Margarita A. Astrálaga	Tel. and email:+390654592151 m.astralaga@ifad.org
Project Contact Person: Amath Pathe SENE, Lead Specialist Environment and Climate for West and Central Africa, IFAD	
Tel. And Email: +393371143704; amath.sene@ifad.org	

6. Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

ANNEXES

Annex 1 List of Participants in consultation sessions

Name	Position	Organization	Location	Contact
Mohamed M. Gbassa	National Trainer and Manager	Hagdi, Service Provider	Kenema	+232 76650915 gbassa56@gmail.com
Mohamed Alpha Bah	Director Livestock /Veterinary Services Division	District Agricultural Office Agricultural Department MAFFS	Bombali	+232 78354828 medalphabah@gmail.com
Mohamed Sissokor	District Forestry Officer	District Agricultural Office MAFFS	Bombali	+232 78615220 medisissokor@gmail.com
Joseph Brima	Assistant Representative	FAO	Freetown	+232 79250150 joseph.brima@fao.org
Baindu P. Massaquoi	Programme Specialist	UNWOMEN	Freetown	+232 76602214 baindu.massaquoi@unwomen.org
Marbey Sartie	Programme Specialist	UNWOMEN	Freetown	+232 78822311 marbey.sartie@unwomen.org
Dr A.B. Rashid-Noah	Senior Lecturer	University of Njala Agricultural Engineering Department		+232 77800525 rashidnoah@yahoo.com
Patrick Sawyerr	Lecturer	University of Njala Soils Department		+232 76656398 patrick.sawyerr@gmail.com
Andrew A. Mansomey	Field Extension Worker	MAFFS	Kenema	+232 78406322 herenkaiman@yahoo.com
Beintu T. Keifala	Regional Head Northern Region	Environment Protection Agency		+232 076617167 abeintu@yahoo.co.uk
Ibrahim S. Kamara	Director	Meteorological Department	Freetown	sinneh71@gmail.com
Gabriel Eugen Watson Kpaka	Deputy Director	Meteorological Department	Freetown	+23279667742 gabrielkpaka@gmail.com

MEETING WITH COCOA FARMERS COOPERATIVES
Climate change + Tree crops teams.

ATTENDANCE LIST - DESIGN MISSION MEETING

COMMUNITY: SEGBWEMA - KAILAHUN DISTRICT DATE: 24.9.17

S/N	NAME	DESIGNATION	ORGANIZATION	AGE CATEGORY (ADULT, YOUTH)	SEX	TELEPHONE	SIGNATURE
1	Amara Koroma	Chairman	Gbotima Cocoa Coop	Adult	M	079814380	AKoroma
2	Musu [illegible]	Vic Chairlady	Molema	Adult	F	088-6[illegible]	[illegible]
3	Brima S. Koroma	Secretary	Gbotima	Adult	M	078-943794	Koroma
4	Mietta Samai	Treasurer	Gbotima	Adult	F	077-702791	M.S
5	Zarrah Ahmed	Womens Leader	Gbatima	Adult	F	076-627060	[illegible]
6	Momah J Fatorma	P.R.O	Gbotima	Adult	M	076 83603	Thomah
7	Gbessay Kamara	Store Keeper	Gbatima	Adult	M	077669310	[illegible]
8	Braima Kanneh	Mens Leader	Gbotima	Adult	M	079 172940	BKanneh
9	Mohamed I. Braima	P.R.O	Mulema	Adult	M	076444057	[illegible]
10	Sam Jusu	Member	Mulema	Adult	M	078-777562	[illegible]
11	Mohamed Jalloh	Member	Gbotima	Adult	M	030-072145	[illegible]
12	Michael Saidu	Sec.	Molehuma	Adult	M	078 061315	[illegible]
13	Movie Kpaudeh	Chairman	Molehuma	Adult	M	076-330596	MMKpaudeh
14	Jibrila Samah	Treasurer	Teglema	Adult	M	030153159	[illegible]
15	Samuel S.S. Nyandemoh	Secretary	Teglema	Adult	M	088-285449	[illegible]
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ADO + SPO's

ATTENDANCE LIST - DESIGN MISSION MEETING

COMMUNITY: Makeni DATE: 26th Sept. 2017

S/N	NAME	DESIGNATION	ORGANIZATION	AGE CATEGORY (ADULT, YOUTH)	SEX	TELEPHONE	SIGNATURE
1	[illegible] Sylvia Rogers	GIS Officer	SCP-GAFSP	Youth	F	076672922	
2	Yusuf Rogers	Dist. Engineer-IVS	MAFFS-Bombali	Youth	M	076772704	
3	Alie A. Fanah	M&E Officer	MAFFS-Bombali	Youth	M	078-248807	
4	Mohamed Abdul Karim Barrie	DAO-Bombali	MAFFS Bombali	Adult	M	078354828	
5	Mohamed Bangura	Consultant	IFAD	Adult	M	079333716	
6	Ahmed AB Sheriff	WMO	SCP/GAFSP	Adult	M	078-302102	
7	Wietse Michiels	consultant	IFAD		M	—	
8	Lionel B. Bockarie	WMO	SCP/GAFSP	Adult	M	078457[illegible]	
9	Wilson Bob Manger	WMO	SCP/GAFSP	Adult	M	078174561	
10	Issa Bangura	National Coordinator	CODALS	Adult	M	030-761101	
11	Ibrahim Jalloh	Irrigation Technical	SCP/GAFSP	Adult	M	030884248	
12	Agness Bata Conteh	Coordinator	DWSL	Adult	F	076948436	
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ATTENDANCE LIST - DESIGN MISSION MEETING

COMMUNITY: Meteorological Dept. DATE: 27/09/17

S/N	NAME	DESIGNATION	ORGANIZATION	AGE CATEGORY (ADULT, YOUTH)	SEX	TELEPHONE	SIGNATURE
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4	Denis S. Lawson			Adult	M	076-625804	
5	Wietse Michiels	IPAD consultant					
6	Ibrahim S. Kamara	Acting director	SL - MET	Adult	M	03033373	
7	Wilson Bob Morgan	WMO	SCP - GAFSP	Adult	M	03817561	
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ATTENDANCE LIST - DESIGN MISSION MEETING

COMMUNITY: Nongowa ABC, Kerema + Green house DATE: 23/09/17

S/N	NAME	DESIGNATION	ORGANIZATION	AGE CATEGORY (ADULT, YOUTH)	SEX	TELEPHONE	SIGNATURE
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3	MOHAMED E. KOROMA	G. SEC.	"	A	M	076-87 5912	
4	STEVEN G. BOCKARIE	MEMBER	"	A	M	076-64-36-65	
5	PHILIP T SAFFA	MEMBER	"	A	M	076-6656753	
6	CYRIL B MATTA	MEMBER	"	A	M	076-76-3202	
7	MARIAMA FODAY	MEMBER	"	A	F	076-76.1510	
8	AMADU M MENDEGLA	MEMBER	"	Y	M	076-874203	
9	TAMBA BARBER	MEMBER	"	A	M	077 60 55 24	
10	MATU JUNISA	MEMBER	"	A	F	078 10 72 21	
11	BANGURA MUSA	MEMBER	"	Y	M	—	
12	MUALEMU IDRISSA	MEMBER	"	A	M	076-598575	
13	HAWA KONNEH	MEMBER	"	A	F	—	
14	MUSU SWARAY	MEMBER	"	A	F	—	
15	FATIMATA TIA	MEMBER	"	A	F	—	
16	FODAY KANNEH	MEMBER	"	A	M	076-71-2965	
17	FATMATA KOSSIA	MEMBER	"	A	F	—	
18	ALHAJI MOMOH	MEMBER	"	A	M	—	
19	Andrew A. Mansaray	BES	MAFFS	A	M	078406322	
20							
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22							
23							
24							

	Name	Male/Female	Position	Contact number	Age	
1	Habib Lukulay	M	Youth Control	077 460178 076 789490	35	
2	Sa[illegible] Manoh	M	Chairman		45	
3	Gbessay Karter	M	Vic Chairman		30	
4	Safula Brima	F	member		39	
5	Mohamed Lukulay	M	"		20	
6	Mariama Sheku	F	"			
7	Jenneh Charles	F	"		36	
8	Habib Conteh	M	"		10	
9	Ibrahim J. Boberdeen	M	"		23	
10	Sheku Conteh	M	"		38	
11	Marie Sam	M	"		35	
12	Massah K Kanu	F	"		21	
13	Mariatu Mansh	F	"		40	
14	Bockarie	M	"			

Go volkpark um Small-Bo chiefdom

Annex 2: Reports of the consultative meetings in the two districts of the project and with the meteorological department

23/9/2017

Meeting was held with the ABC in Nongowa. The ABC consisted of:

8 Farmer Based Organisations (FBO) – with 30 members per organization
2 women groups
There was a 300,000 Leones registration fee.

The meeting was an exploratory one to find out how successful previous projects had been in supporting ABCs and whether they were sustainable. The ABC:

i. They confirmed the extent of their sustainability by having their own commercial bank accounts and have been able to finance the construction of two new buildings from their own finances. The buildings are used as a rice mill and as a safe place to store fertilisers.
ii. They also kept poultry; 2,000 aquaculture fingerlings in the form of a fishpond; they had a goat and 20 sheep; 7 pigs; and additional buildings; and produce 1000 bushels of rice every year.
iii. Fertilisers are supported by MAFFS at a cost of 1 bag for 2 bushels of rice. They stressed that they were aware of the dangers unsecured fertilisers can be from IFAD Farmer Field School (FFS) training.
iv. They would need support in the procurement of solar-powered cold storage for the storing of fish and meats – this would be acceptable for IFAD's value chain approach.

24/9/2017 (meeting was with tree crops consultant Peter Lowe plowe2003@outlook.com)

The meeting was held with the Segbwema community cocoa farmer cooperative in Kailahun District.

The cooperative formed in 2010 and consisted of 846 members (552 male, 294 female). The meeting produced the following information:

i. The farmers explained that what they had learned from the FFS was water harvesting and financial management.
ii. Past yields: 2013/14 59.64 metric tonnes (mt); 2015/16 40.89mt; and 2016/17 28.3mt. The decreasing yields were due to buyer delays in payment and their cocoa has been decertified as fairtrade, hence they cannot demand premium prices. The decertification happened because of the umbrella group actually unfairly paid the farmers less, pocketing the difference and consequently have been decertified.
iii. Their main export market is Japan.
iv. The cooperative is otherwise fully fairtrade compliant and don't make use of fertilisers; they use mulching to add nutrients to the soil.
v. Rainwater harvesting in the nurseries is only good for the rainy season, and useless in the dry season which is why they are located near a river.
vi. They have an account with a local bank

vii. Cooperative is not financially literate although training was provided
viii. They would need solar driers to improve the cocoa drying.
ix. They are open to the idea of planting new crops
x. Tenure security: They are owners of their land.

27/09/2017

Meeting was held with the meteorological department to explore possibilities for upscaling of the IACCAPFS GEF project. Meeting was held with the:

Acting director;
Head of Climatology;
Two Managing Directors
The Accountant
And former IFAD IACCAPFS GEF project coordinator.

Discussions:
The meeting raised a number of issues that were kept in consideration when designing the draft project. Namely:

i. That with regards to the Automatic Weather Stations (AWS) under the GEF project, the Meteorological Department needed further support in further support in finalizing their installation and training for their maintenance and repair. Their annual budget was USD 50,000.
ii. **AWS upscaling.** With regards the AWS upscaling, the original design meant that the data being collected was being stored on site and there were logistical issues relating to driving many hours in difficult terrain to collect the data, both in manpower, time and cost of transport. Consequently, they proposed to make the HQ office a remote central station for the electronic collection of data, that could be transmitted via a SIM card and wireless internet. For this data to be received they would need support in the installation of servers as well as training of technicians; they would need support for the purchase and installation of EWS forecasting software. The issue of internet connectivity of the HQ office was also raised as the service provider was not providing internet due to unpaid bills, due to the high cost and low budget.
iii. The original AWS were deemed too expensive to upscale and maintain, the met. Office therefore suggested low-tech alternatives and scaled-back technologies that were more suited to the environment in Sierra Leone and were still capable of electronic collection and transmission of data.
iv. **Training.** Due to the low profile of the department, they were in need of training of qualified staff to graduate and/or Masters level. IFAD's response was that while this would be looked into. Other training included capacity building for field workers. The people present at the meeting also explained that they never received training in M&E.
v. **Agency.** At the time of the mission, discussions were ongoing in Parliament to make the Meteorological Department into its own Agency with an independent budget and revenue streams. Under the then being discussed Meteorological Agency Act (2017), a future Agency would be able to collect and sell its services and data collected to private

agricultural and mining etc. as well as public sectors for a fee and be able to set its own budgets, this would make its operations more sustainable.

vi. **UNDP.** The meeting members also explained that UNDP had already been working with the Meteorological office to install stations at the airport. The IFAD mission then arranged to meet with Ms Tanzila Sankoh (tanzila.sankoh@undp.org) to discuss experiences, synergies and possibilities for future cooperation.

Annex 3: Letter of endorsement

Government of Sierra Leone
Sierra Leone Environment Protection Agency
Office of the President
21 Old Railway Line, Brookfield's Freetown.

31st January, 2019.

JAKOB TUBORGH
Country Programme Manager
West and Central Africa Division
Programme Management Department
Rue Harris Memel Foteh
11 Plateaux- Villon, Cocody
01 BP 1747 Abijan 01, Cote d'Ivoire
Tel: +225 88 81 21 37

Dear Sir,

Subject: Endorsement for Climate Resilience Development Project

I write to endorse funding for the above project proposal and to also confirm that the proposal is in accordance with my government's national priorities and our commitment to the relevant global environmental conventions.

If approved, the proposal will be implemented by International Fund for Agricultural Development (IFAD) and the Environment Protection Agency in close coordination with other relevant institutions. The total financing being requested for this project is **US$ 9,916,925** inclusive of Agency fees for project cycle management services associated with the total Adaptation Fund.

When implemented, the above project will help address key issues relation to climate change and the environment as a whole.

Thank you for your understanding and continued support.

Yours sincerely,

Prof.Foday M. Jaward (PhD)
Executive Chairman
NDA/FP Sierra Leone

Annex 4: Environmental and Social Management framework of the AVDP project

IFAD
Investing in rural people

Republic of Sierra Leone

Agriculture Value Chain Development Project- Promoting Climate Resilience in the Cocoa and rice sectors as Adaptation strategy in Sierra Leone

Environmental and Social Management Framework

Photo credit: Mohamed Ajuba Sheriff

June 2018

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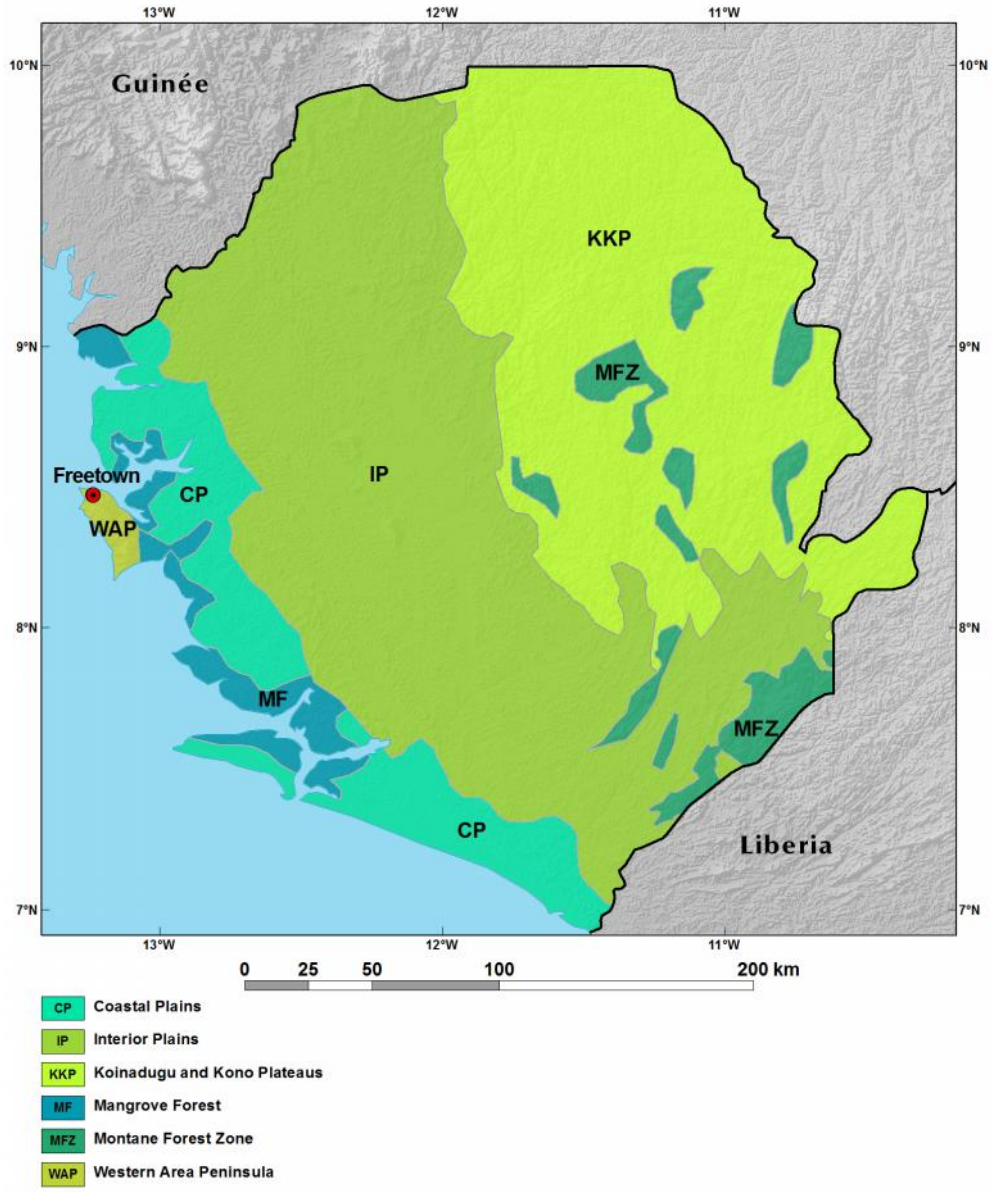
Abbreviations and Acronyms

ABC	Agribusiness Centre
ADP	Agricultural Development Program
AF	Adaptation Fund
AVDP	Agriculture Value Chain Development Project
AWPB	Annual Work Plan and Budget
C/KM	Communication and Knowledge Management
COSOP	Country Strategic Opportunities Program
DAO	District Agricultural Officer
DSF	Debt Sustainability Frame work
EIA	Environmental Impact Assessment
ENRM	Environmental and Natural Resource Management
EPA-SL	Environmental Protection Agency of Sierra Leone
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FAO	Food and Agriculture Organization
FBO	Farmer Based Organization
FFS	Farmer Field School
FO	Farmer Organization
GALS	Gender Action Learning System
GEF	Global Environmental Facility
GDP	Gross Domestic Product
GHG	Greenhouse Gas
IFAD	International Fund for Agricultural Development
IVS	Inland Valley Swamp
KM	Knowledge Management
Km	Kilometre
MDA	Ministries, Departments and Agencies
MEA	Multilateral Environmental Agreements
M&E	Monitoring and Evaluation
MAFFS	Ministry of Agriculture, Forestry and Food Security
MTR	Mid-term Review
(S)NAP	(Sierra Leone) National Action Plan
NPCU	National Programme Coordination Unit
NSC	National Steering Committee
NRM	Natural Resource Management
PEAR	Preliminary Environmental Assessment Report
PDO	Project Development Objective
PDR	Project Design Report
QE/QA	Quality Evaluation/Quality Assurance
RCPRP	Rehabilitation and Community-based Poverty Reduction Project
SCADeP	Smallholder Commercialization and Agribusiness Development Project
SCP-GAFSP	Smallholder Commercialization Programme - Global Agriculture and Food Security Programme
SECAP	Social Environmental and Climate Change Procedures
SLRA	Sierra Leone Road Authority



Sierra Leone Eco-regions

(Source: Tappan, G. G., Cushing, W.M., Cotillon, S.E., Mathis, M.L., Hutchinson, J.A., and Dalsted, K.J., 2016, West Africa Land Use Land Cover Time Series: U.S. Geological Survey data release, http://dx.doi.org/10.5066/F73N21JF)

Executive Summary[30]

Introduction

Sierra Leone has a landmass of about 72,368 square kilometres and a population of around 7.4 million (40 per cent youth), growing at 2.2 per cent annually.[31] Environmental degradation and Poverty are widespread but are particularly acute in the rural areas where 59 per cent of the population live. Agriculture, the largest sector in the economy, accounted for 59 per cent of GDP[32] in 2015, 62 per cent of the labour force[33], and 22 per cent of export earnings.[34] Cash crops produced for export include cocoa and coffee, while oil palm is produced for domestic consumption and some export. The focus commodities identified on a national basis are: rice, cassava, oil palm, fisheries (especially artisanal) and non-timber forests products. These are widely managed by the poorest but with potential for growth and contribution to poverty reduction and food security.[35] The key agricultural sector challenges include: expert crisis, declining soil fertility, low technology input, agricultural infrastructure, value chain and value additions, input and output marketing, and financial services. Others are: technology access and farmer empowerment, formal farmer based organisation, access to land, tax structure, investment policy, fisheries, weak sector coordinating mechanism, gender and youth in agriculture, nutrition diversification, and farmer health.

AVDP Project targeting and implementation

The Agricultural Value Chain Development Project (AVDP) will be implemented in the current 16 districts of Sierra Leone. AVDP targets about 33,000 direct beneficiaries drawn from smallholder farmers, Farmer-based organizations (FBOs) including cooperatives, partnering financial institutions, small scale rural entrepreneurs, women and rural youth (18 – 35 years). Geographic targeting will be applied specially in the selection of the districts and communities to be supported for oil palm and cocoa production, taking into account the climate change impact, potential for further deforestation, and the legacy factor from previous IFAD-assisted interventions. AVDP will mainstream gender sensitive approaches and farmer-led innovations using the GALS methodology and promote gender equity as well as the participation of women and youth in all the value chain activities.

The Ministry of Agriculture, Forestry and Food security National Steering Committee (MAFFS-NSC) will provide oversight, direction and advice for project implementation. The existing IFAD NPCU will implement AVDP in partnership with the District Government/District MAFFS, partner private sector entities and FBOs/Cooperatives.The Adaptation Fund will strongly support climate resilience of smallholder farmers and other value chain actors through additional non-co-financed climate adaptation activities to improve resilience at the community and national levels.

Risk categorization and Key environmental issues

The AVDP is rated as **Category B** in **Environmental and Social** risk and **High** in terms of **Climate** risk due to maximum temperature increases and the generally low adaptive capacity in Sierra Leone. The key climate issue for AVDP is the maximum temperature rise with increased risk to cocoa production. In terms of the environment, deforestation remains a chronic problem with the Savanna increasing from 40.5% of the

[30] The ESMF draft was produced by Mayowa Fasona (Natural resource management specialist in the Department of Geography, University of Lagos, Nigeria) with field assistance from Mr Denis Lansana (Environmental Specialist on the SC-GAFSP). Special thanks to Rich Pelrine and Amath Pathe Sene of IFAD for guidance and support received.

[31] World Bank data, 2016

[32] Economic Intelligence Unit, Country Report 4th Quarter, 2016

[33] International Labour Organization (ILO) et al, Sierra Leone 2014 Labour Survey Report, 22 September 2015

[34] World Bank, Sierra Leone, 2015

[35] National Sustainable Agriculture Development Plan 2010-2030: Sierra Leone's Comprehensive African Agriculture Development Programme. Version Adapted by CAADP Compact 18th September 2009, Freetown

total area in 1975 to 46% in 2013[36]. Sustainable development in a largely agrarian economy is heavily reliant on the sustainable use of biodiversity and natural resource management. Farmers have been reported to have continued to apply too much fertilizer and at the wrong time which increase waste, indirect GHG emissions risk of pollution and reduce productivity. The construction of feeder roads under past projects overlooked their environmental impacts by obstructing IVS drainage areas thus causing waterlogging of rice fields. Land tenure rights for the rural poor are weak. Farmers are frequently pushed-off by landowners after land improvement interventions have taken place. Gender inequality in Sierra Leone rates among the worst globally. Women have little land rights and are underrepresented in land decision-making institutions.

Environmental and Social Management and Monitoring Plans

Several legal and regulatory frameworks were reviewed to set in context the ESMF for the AVDP. These documents include the: Constitution of the Republic of Sierra Leone, as well as the Environmental Protection, Meteorological and Forestry Acts. Institutional and policy regulatory frameworks including the Sierra Leone's national land policy, environmental policy, national agricultural development plan and Environmental Protection Agency (EPA) guidelines for agriculture development, among others, were also reviewed. IFAD safeguard policies including SECAP, climate change strategy, environment and natural resource management policy and the COSOP for Sierra Leone 2010-2015 were also reviewed.

It also raised environmental issues about the construction and rehabilitation of market-connected farm roads. In addition, other eenvironmental impacts identified for AVDP include: land degradation and pollution from agrochemical use, earthen dam construction, and climate change issues (including dry spell and increasing rainstorm and windstorm, and GHG emission from rice paddies). The major social impacts identified include: land tenure and access issues, social exclusion and gender inequality, unsafe and non-healthy working conditions, managing expectations and conflicts resurgence, and elite capture. The health concerns include waterborne disease from IVS, high cholesterol from oil palm consumption and dust effects from road construction and rehabilitation. The Sierra Leone Environmental Protection Agency (EPA-SL) requires levels of screening ranging from registration, Preliminary Environmental Assessment Report, to Mandatory EIA for agricultural projects depending on scale (small, medium and large) and the extent of the likely environmental impacts. As a result, the AVDP requires the development of an environment and social management framework (ESMF), detailing the environmental management and monitoring plans to guide AVDP subprojects' implementation. The environmental and social management plan for the identified impacts was developed with input from a broad range of government ministries, department and agencies consulted during the ESMF field mission in Freetown. The plan indicates a significance rating and geographical extent/prevalence of each impact, and recommended mitigation measures. It also identifies who is responsible for implementation of the mitigation measures, how implementation can be verified, and the frequency for each of the potential overall impacts.

Mitigation measures were also recommended for specific value chain enterprises including oil palm, cocoa, rice and cassava, sweet potato and groundnut farming. Mitigation measures for impacts of market infrastructure including: construction and rehabilitation of feeder roads and farm tracks and culverts and bridges, rehabilitation of Agro Business Centres (ABC), land development activities and small scale (earthen) dams and irrigation schemes in the IVS were also recommended. Apart from the strategy for a robust and effective grievance/ complaints management mechanism to reduce conflicts set out in the ESMF, AVDP will also rely on IFAD complaints procedure to receive and facilitate resolution of concerns and complaints with

[36] Tappan, G. G., Cushing, W.M., Cotillon, S.E., Mathis, M.L., Hutchinson, J.A., and Dalsted, K.J., 2016, West Africa Land Use Land Cover Time Series: U.S. Geological Survey data release, http://dx.doi.org/10.5066/F73N21JF

respect to alleged non-compliance of its environmental and social policies and the mandatory aspects of its Social, Environmental and Climate Assessment Procedures in the context of IFAD-supported projects.

Funding the Environmental and Social Monitoring Plans

A total of USD 775,082.00 (1.2% of the total estimated project cost) has been estimated for the environmental and social monitoring plans for the AVPD. A successful mainstreaming of climate change and the ESMF into implementation of the AVDP project requires adequate sensitization and the strengthening of institutional capacities, in particular those Farmers Organization, Agricultural Development Program (ADP), and Women Organizations. It also requires context-specific, in-situ training sessions for farmers and other actors in the value chain to mainstream climate-smart agricultural value chain and improve their resilience. The total training cost to achieve this is estimated at USD 398,689 which represents about 0.62% of the project cost. The Adaptation Fund (AF) will support the cost for implementing the Environmental and Social Monitoring Plans and the associated capacity building to mainstream climate resilience into the AVDP.

1. INTRODUCTION

1.1 Background

Sierra Leone has a total landmass of 72,368 square kilometres and a population of around 7.4 million (40 per cent youth), growing at 2.2 per cent annually.[37] Environmental degradation and Poverty are widespread but is particularly acute and concentrated in the rural areas where 59 per cent of the population live[38]. About 59.7 per cent of rural households in Sierra Leone are food insecure, compared with 25.1 per cent in urban areas.[39] Food expenditure for the rural household averages 63 per cent of total household expenditures. Ironically, food insecurity is highest in households living in livelihood zones dominated by food crop production. It is also more visible in households headed by women, and highest during the months of August to October when rural married women bear the brunt of caring for the home when the husbands migrate to the diamond mines in search of employment. Although the Sierra Leone economy grown substantially since the end of the civil war in 2002, it suffered two major shocks in 2014/2015 – the Ebola epidemic and the collapse of iron ore prices, with GDP growth shrinking to -21 per cent in 2015. Although economic growth resumed following new investments in mining, agriculture and fisheries, with a GDP growth of 4.3 per cent in 2016, Sierra Leone remains at the bottom of the Human Development Index (HDI) (with 0.420 in 2015, ranking 179th out of 188 countries[40]).

Agriculture, the largest sector in the economy, accounted for 59 per cent of GDP[41] in 2015, 62 per cent of the labour force[42], and 22 per cent of export earnings.[43] Cash crops produced for export include cocoa and coffee, while oil palm is produced for domestic consumption and some export. The focus commodities which has been identified on a national basis are: rice, cassava, oil palm, fisheries (especially artisanal) and non-timber forests products. These are commodities widely managed by the poorest but with potential for growth and contribution to poverty reduction and food security.[44] The key agricultural sector challenges include: expert crisis, declining soil fertility, low technology input, agricultural infrastructure, value chain and value additions, input and output marketing, and financial services. Others are: technology access and farmer empowerment, formal farmer based organisation, access to land, tax structure, investment policy, fisheries, weak sector coordinating mechanism, gender and youth in agriculture, and nutrition diversification and farmer health[45]. However, Sierra Leone's agriculture contributes to widespread environmental degradation through poor management practices due to slash and burn practices and most farmers are not

[37] World Bank data, 2016
[38] Statistics Sierra Leone, 2015 Population and Housing Census, December 2016
[39] Government of Sierra Leone, WFP and FAO, State of Food Security in Sierra Leone 2015
[40] United Nations Development Programme (UNDP), 2016 Human Development Report, August 2017
[41] Economic Intelligence Unit, Country Report 4th Quarter, 2016
[42] International Labour Organization (ILO) et al, Sierra Leone 2014 Labour Survey Report, 22 September 2015
[43] World Bank, Sierra Leone, 2015
[44] National Sustainable Agriculture Development Plan 2010-2030: Sierra Leone's Comprehensive African Agriculture Development Programme. Version Adapted by CAADP Compact 18th September 2009, Freetown
[45] National Sustainable Agriculture Development Plan 2010-2030: Sierra Leone's Comprehensive African Agriculture Development Programme. Version Adapted by CAADP Compact 18th September 2009, Freetown

aware of the linkage between farm practices and environmental degradation. The management and control of pesticides in Sierra Leone is also weak[46].

1.2 Rationale and Objectives of the ESMF

The Sierra Leone Environmental Protection Agency (EPA-SL) requires levels of screening ranging from registration, Preliminary Environmental Assessment Report, to Mandatory EIA for agricultural projects depending on scale (small, medium and large) and the extent of the likely environmental impacts. The Agricultural Value Chain Development Project (AVDP) has been rated as a category B project during the IFAD Social Environmental and Climate Assessment Procedures (SECAP) analysis, indicating that the project may have reduced adverse social impacts on human populations or environmentally significant areas. The project has also been rated as highly vulnerable to the impact of climate change, largely due to the rain-fed nature of agriculture in Sierra Leone, the rising trend in maximum temperature which could negatively impact cocoa production, and the generally weak adaptive capacity in Sierra Leone. The project design mission has proposed additional fund from the Adaptation Fund (AF) to mainstream climate resilience into the agricultural value chains, market infrastructure and improve climate support services.

The agri-enterprises and related infrastructure projects supported under AVDP will be implemented in locations/communities within all the 16 districts that are not yet known. As a result, the AVDP requires the development of an environment and social management framework (ESMF) to guide subprojects implementation.

The main objectives of the ESMF as per the terms of reference of this study, are to:

- Identify potential impacts of the AVDP project and to prepare a generic Environmental and Social Management Plan for the direct and indirect impacts, as well as incremental impacts as they relate to land use changes, deforestation and soil degradation, soil erosion and flooding, dust emissions, noise pollution, agrochemical usages resulting from AVDP. It also addresses mitigations for issues related access and social relations, benefits sharing and settling of grievances, among others.

- To formulate an Environmental and Social Management Framework (ESMF) including any standards and procedures, specifying how unidentified subprojects whose location are unknown will systematically address environmental and social issues in the screening for environmental and social impacts and categorization, site selection criteria, mitigation measures, design, implementation and operational phases as well as maintenance of the subproject lifecycle;

- For infrastructure related projects, to formulate Environmental and Social guidelines for construction firms to be recruited as contractors. These guidelines shall be recommended for incorporation in contractor's bids and contract documents.

1.3 Approach and Methodology and Stakeholders Consultation

The first design mission for the PDR of the AVDP was completed in late 2017, and ready for QE as at 30 April 2018. Component 1 (Climate Resilient and Smart Agricultural Production) of the AVDP is expected to strengthen organizations and support increased production and productivity of rice, cocoa and oil palm, by training the farmers on good agronomic practices, supporting their access to inputs, equipment and infrastructure, and linking them to markets. From the logical framework, the goal is to

[46] EIA Guidelines for the Agricultural Development, Sierra Leone Environmental Protection Agency

improve the livelihoods and climate change resilience of rural farming households in Sierra Leone. The core indicators related to component 1 include: percentage of persons/households reporting adoption of environmentally sustainable and climate-resilient technologies and practices; percentage of persons/households reporting adoption of new improved inputs technologies or practices; and number of hectares of land brought under climate-resilient management.

The AVDP is expected to be supported by the Adaptation Fund (AF) to the tune of 9% to achieve the objectives and key targets of Component 1. The Government of Sierra Leone is, therefore, applying to the AF for a request for project funding from the Adaptation Fund to the tune of USD 9.9m. The overall objective of this additional climate finance for adaptation is to reduce vulnerability and increase adaptive capacity to respond to the impacts of climate change, including variability at local and national levels. It will also assist in addressing the resilience of natural resources critical for sustaining agricultural production and increasing food security. Specifically, the additional AF fund is expected to: Climate-proofed agricultural value chain (production, post-harvest and marketing) and climate resilient livelihood diversification (AF component 1); Enhance Water control, security and management measures (AF component 2); and Enhance climate service infrastructure, delivery and early warning in agriculture (AF component 3).

Social, Environmental and Climate Assessment Procedure (SECAP) notes for the AVDP PDR and the AF Request for Project Financing Proposal have identified a number of key environmental and climate issues for the project to include: Maximum temperature increases with decreasing climatic suitability for cocoa production; increased frequency of heat waves as well as the extension of dry spells could also lead to a reduction in the production of subsistence crop; increased frequency extreme precipitation events could lead to an increased disruption of market services and infrastructures such as roads; degradation of natural resources as a result of unstainable agricultural practices (slash and burn, firewood collection, wood harvest for charcoal, logging, etc.); environmental impact of construction of feeder roads; over application of fertilizer; and land tenure rights and gender inequality.

The QE for the AVDP PDR has also raised serious concerns about possible deforestation resulting from Oil Palm cultivation, as well as wetland degradation resulting from rice cultivation in the coastal swamp and mangrove areas in Sierra Leone. It also raised environmental issues about the construction and rehabilitation of market-connected farm roads. This ESMF report builds on the SECAP notes to examine specific issues especially deforestation resulting from Oil Palm and Cocoa cultivation, removal of swamps and mangrove for wetland rice cultivation; effects of construction of earthen dams in the inland valleys; impact of rehabilitation and construction of rural market-connected farm roads on the environment; and land tenure rights and land accessibility, and gender inequality, among others.

In terms of the technical scope, the ESMF reviewed environmental, climate and social impacts, focusing on unsustainable agricultural practices and climate change. It also reviewed a number of legal and policy frameworks related to agriculture, environment, climate, access to land, gender issues in Sierra Leone. These documents include: The Constitution of the Republic of Sierra Leone 1991; The Environment Protection Act, 2000; The Sierra Leone Meteorological Agency Act, 2017; The Forestry Act, 1988; The National Youth Service Act, 2016; The National Land Policy for Sierra Leone, 2015; National Sustainable Agriculture Development Plan 2010-2030; National Environmental Policy (Revised October 1994); Sierra Leone Land Degradation Neutrality National Report; Sierra Leone National Action Plan to Combat Desertification and Land Degradation; EPA-SL EIA Guidelines for the agricultural Development; Sierra Leone's Intended Nationally Determined Contribution; and National Resilience Priorities Report (NRP-AGIR), 2017.

Consultation was also held with officials in the Ministry of Agriculture, Forestry and Food Security (MAFFS), Ministry of Lands, Country Planning and the Environment, Ministry of Works, Environmental Protection Agency (EPA), Forestry Department, and the Sierra Leone Meteorological Agency. In addition, valuable time was spent to discuss with project management officials of the ongoing Smallholder Commercialization Programme - Global Agriculture and Food Security Programme (SCP GAFSP) Project with respect to environmental and social concerns.

The IFAD's Social Environment and Climate Assessment Procedures (SECAP) guidelines, IFAD's Environment and Natural Resources Management Policy, the Gender Equality and Women's Empowerment, and Targeting policies were also consulted in developing this ESMF document.

1.4 Disclosure of ESMF

IFAD's Policy on the Disclosure of Documents (2010) requires full disclosure to the public, and includes information notes on projects being developed for Board presentation, agreements for approved loans and grants, and project/program design documents. This ESMF will therefore be disclosed on IFAD's official website (http://www.ifad.org). In addition, the ESMF will be disclosed on the Ministry of Agriculture, Forestry and Food Security's (MAFFS) official website (www.maffs.gov.sl).

1.5 Challenges and Assumptions

The challenges in preparing the ESMF include:

- The specific agri-enterprise projects locations are still unknown, the ESMF has assessed impacts based on likely proposed projects in comparable locations at districts based on the knowledge of the environmental conditions;
- Due to time limitations (only 7days granted for the ESMF Development) and logistical reasons, field consultations were limited to the Ministries, Agencies and Departments (MDAs) which are located in Freetown.
- The scope of the subprojects to be supported is still unclear. As at the time of this ESMF, IFAD is still discussing with the World Bank and the MAFFS with the viewing to make significant changes to the original design of the AVDP Project. However, it is highly likely that the value chain crops to be supported (Rice, Oil Palm, Cocoa, and Vegetables) will remain the same, and the focus on smallholder farmers across the districts will also remain. It is also highly likely that supporting Climate Resilient and Smart Agricultural Production will remain one of the key components, and the support from Adaptation Fund will be pursued.

1.6 Report Structure

Chapter 1 describes the objectives of the ESMF and the key environmental and climate issues for the AVDP and the AF request, as well as the assumptions for the ESMF. Chapter 2 describes the AVDP project area and target groups, project objectives and impact indicators, implementation structure, potential partners, and environmental and social category. Chapter 3 reviews some of the legal, institutional and regulatory framework for ESIA and agri-business in Sierra Leone and how they affect the AVDP. Chapter 4 describes in detail the environmental, climate change and social contexts of the AVDP. Chapter 5 reviews in detail the potential positive and negative environmental, climate and social impacts of the project. Chapter 6 describes the Environmental and social Management Plan for AVDP and the Stakeholder Engagement, Community Sensitization, Expectation and Grievances management mechanisms. Chapter 7 presents a review of Environmental, Climate, Social Impacts of AVDP Sub-Projects and the Environmental and Social management Framework (ESMF) for Agricultural Value Chain Stages. Chapter 8 describes the framework for Environmental and Social Screening of Sub-Projects. Chapter 9 presents the Environmental and Social Impacts monitoring plans and cost, and Chapter 10 itemizes the capacity building and training for mainstreaming the Environmental and Social Management and Monitoring Plans.

2. DESCRIPTION OF THE PROPOSED PROJECT

2.1 Project Area and Target Groups

AVDP will be implemented in the current 16 districts of Sierra Leone. This will allow further scaling up through the established institutional capacities and available potential for horizontal expansion and improved productivity of the selected crops combined with market infrastructure improvements. Table 1 summarizes some of the characteristics of the districts. Most of the districts have poverty rates of 50 percent to 62 percent, except Western Area Urban with 20.7 per cent, and Moyamba and Tonkolili with 70.8 percent and 76.4 per cent, respectively. The widespread poverty justifies the nationwide coverage by AVDP. Agriculture is the dominant economic activity in the rural districts, followed by mineral mining in some districts.

Table 1: Basic facts about the districts in the project area

Province/ District	No. of chief-doms[1]	Land area		Cropped area under specific major crop (%)[1]			Poverty head-count (%)[2]	Prevalence of malnutrition (%)[3]
		Total (km^2)	Under crop (ha)[1]	Rice	Oil palm	Cacao		
Eastern	**46**	**15,553**	**473,925**	**46**	**9**	**18**	**61.3**	
Kailahun	14	3,859	202,131	41	12	23	60.9	n.a.
Kenema	17	6,053	141,837	49	12	17	61.6	5.5
Kono	15	5,641	129,955	50	2	13	61.3	4.5
Northern	**54**	**35,846**	**494,059**	**62**	**7**	**0**	**61.0**	
Bombali								
Karene	14	7,895	79,681	62	4	0	57.9	4.7
Kambia	7	3,108	79,592	74	5	0	53.9	6.5
Koinadugu								
Falaba	11	12,121	102,387	69	3	0	54.3	5.3
Port Loko	11	5,719	125,625	58	8	0	59.9	6.7
Tonkolili		7,003	106,775	52	13	0	76.4	6.8
Southern	**52**	**19,694**	**334,338**	**47**	**13**	**2**	**55.4**	
Bo	16	5,219	116,346	48	19	4	50.7	4.3
Bonthe	11	3,468	51,662	30	0	13	51.4	n.a.
Moyamba	14	6,902	85,161	54	4	0	70.8	4.4
Pujehun	11	4,105	81,170	48	15	2	54.1	4.0
Western	**12**	**557**	**11,272**	**35**	**3**	**1**	**28.0**	
Western Area Rural	4	544	9,406	34	0	2	57.1	2.3
Western Area Urban	8	13	1,724	45	10	2	20.7	1.9
Total (National)	**164**	**71,650**	**1,313,447**	**52**	**9**	**7**	**52.9**	**4.7**

Source: 1 Statistics Sierra Leone, 2015 Population and Housing Census, December 2016

2 World Bank, A Poverty Profile for Sierra Leone, June 2013

3 UNICEF, Sierra Leone Nutrition Survey, 2014

AVDP will target about 33,000 direct beneficiaries drawn from smallholder farmers, FBOs including cooperatives, partnering financial institutions, small scale rural entrepreneurs, women and rural youth (18 – 35 years).

Geographic targeting: will be applied specially in the selection of the districts and communities to be supported for oil palm and cocoa production, taking into account the climate change impact and the legacy factor from previous IFAD-assisted interventions.

Gender targeting: criteria have been specified for the selection of beneficiaries for IVS and tree crops development. AVDP will mainstream gender sensitive approaches and farmer-led innovations using the GALS methodology. In conjunction with the MAFFS Gender and Nutrition Unit, AVDP will promote gender equity as well as the participation of women and youth in all the value chain activities.

2.2 Goal, Objectives and Impact indicators

The **overall project goal** is livelihoods and climate change resilience of rural farming households in Sierra Leone improved. The project development objective (PDO) is to promote agriculture as a business for enhanced incomes and reduced rural poverty. The objective feeds directly into the two strategic objectives of the Country Strategy Note 2017-18, of: smallholder farmers' access to technical skills and market is improved; and rural communities' access to finance is improved.

The core indicators include:

- Goal: Total outreach - number of households receiving services promoted or supported by the project (25,667 at MTR and 33,000 at completion)
- Goal: Percentage of households that experience a reduction of hungry season from 4 to 2 months (50 per cent at MTR and 80 per cent at completion)
- PDO: Number of rural producer organisations engaged in formal partnerships/ agreements or contracts with public or private entities (100 at MTR and 300 at completion)
- PDO: Number of existing regulations/policies/strategies proposed to policy makers for approval, ratification or amendment (one at MTR and two at completion)
- Component 1: Percentage of persons/households reporting adoption of new improved inputs, technologies or practices (40 per cent at MTR and 100 per cent at completion)
- Component 1: Percentage of households reporting an increase in production (25 per cent at MTR and 100 per cent at completion)
- Component 2: Percentage of supported rural producers' organisation members reporting a decrease in post-harvest losses (30 per cent at MTR and 100 per cent at completion)
- Component 2: Percentage of persons reporting improved physical access to market, processing and storage facilities (40 per cent at MTR and 100 per cent at completion)

2.3 Project implementation structure

The MAFFS National Steering Committee (NSC) will provide oversight, direction and advice for project implementation, and in particular, approve the AWP&B of the project as well as its periodic progress reports. The NSC will include representation of key stakeholders including, the ministries for Finance, Economic Development and Planning, Trade and Industry, Local Government, Community Development, Social Welfare, Gender and Children Affairs, Lands, Country Planning and Environment, EPA, Youth and Sports, Directorate of Feeder Roads of Sierra Leone Road Authority (SLRA), the Chief Agricultural Officer/Technical Head of MAFFS, two members of Farmers Associations (one for staple crops and one for tree crops), and two private sector representatives (one for staple crops, especially rice, and the other for tree crops). The National Programme Coordinator of NPCU shall be the Secretary of the NSC for AVDP.

The existing IFAD NPCU will implement AVDP in partnership with the District Government/District MAFFS, partner private sector entities and FBOs/Cooperatives. This responsibility includes project planning, financial management, contracting implementing partners for specific activities and tasks, M&E, communication and knowledge management (C/KM), supervision of project activities at the district level, facilitating linkage with governmental, private sector and development institutions, and integrating project experience into policy dialogue.A small complement of Social Mobilization staff would be added to the NPCU and district level to lead the farmer organization (FO) and mobilization process, facilitate business planning, as well as the interface between the FOs and private sector and extension service providers. A Policy Officer will be recruited as the focal point for policy dialogue for IFAD projects. A matching grant (MG) steering committee will also be established to manage the funds. Staff implementing AVDP will have opportunity for training to enhance their performance.At the district level, the District Agric Officer (DAO) of MAFFS will be responsible for coordinating the implementation of project activities, and is expected to lead the market linkage platforms at the initial stage of development. S/He will be supported by the team of subject matter specialists and extension agents.

IFAD will supervise the project directly and the IFAD Country Office will provide continuous back support and guidance. A baseline study will be carried out in the first year of project implementation to establish future monitoring and impact assessment benchmarks. A Mid-Term review will be carried out jointly with the government to evaluate project progress, identify areas for further improvement and revise project approach, activities and budgets on the basis of MTR findings.

2.4 Adaptation Fund

The Adaptation Fund will strongly support climate resilience of smallholder farmers and other value chain actors in many AVDP activities to complement their income and livelihood sources. The AF will implement additional non-co-financed activities to assist Sierra Leone to meet the costs of adaptation activities and increase resilience at the community and national levels. The activities are:

- Use the University of Njala's FAO sponsored curriculum to train trainers in climate smart agriculture and pilot 642ha plots of land.
- Train Barefoot Women[47] as solar technicians and install solar electrification in rural villages.
- MoU with MAFFS to plant sustainable Acacia forestry plots for charcoal and furniture, raise awareness against slash and burn, pilot low cost efficient charcoal kilns.
- Support alternative forestry livelihoods: honey bee and snail farming, aquaculture in earth dams and small ruminants.
- Complete the GEF project to support the Meteorological Department by developing a governance management plan to successfully and sustainably operate the automatic weather stations that have already been built, provide capacity building training, install a base station and weather forecasting software, and support the development of an Early Warning System service to farmers. If successful construct more weather stations.
- Support EPA in a climate change awareness raising programme.

The Adaption Fund is also expected to support the cost of mainstreaming the ESMF into the AVDP project implementation.

2.5 Other potential partnerships

The AVDP will be strongly aligned with The World Bank's Smallholder Commercialization and Agribusiness Development Project (SCADeP) being implemented in partnership with the UK DFID. Discussions are already ongoing to align and harmonise SCADeP and AVDP for efficient application and utilization of resources.

A range of public and private sector service providers and implementation partners will be engaged by AVDP to facilitate project implementation at different stages of the value chains and build the capacity of the project target groups towards agriculture as a business. The modalities for the engagement of the service providers are specified in the description of the subcomponents in the PDR.

2.6 Key issues identified on social and environmental management

[47]Barefoot Women Solar Engineers is a local NGO that trains illiterate women as solar PV engineers to set up small businesses to install and repair solar electrification in their villages.

- Maximum temperature increases threaten increased risk of high yielding cocoa crop production failing.
- Despite FFS training, farmers have been reported to continue to apply too much fertilizer and at the wrong time which increase waste, indirect GHG emissions and reduce productivity.
- Deforestation is a serious and chronic problem for Sierra Leone. There is increasing 'Savannisation' as the Savanna ecosystems increased from 40.5% of the total area of Sierra Leone in 1975 to 46% in 2013. In the same venin the forest area declined from 5% in 1975 to 3.47% in 2013; and woodland decline from 15.4% in 1975 to 8% in 2013[48]. Sustainable development in a largely agrarian economy is heavily reliant on the sustainable use of biodiversity and Natural Resource Management (NRM).
- The construction of feeder roads has been found to have overlooked their environmental impacts by obstructing IVS drainage areas and causing waterlogging of rice fields.
- Land tenure rights for the rural poor are weak to non-existent. Farmers are frequently displaced by landowners after land improvement interventions have taken place.
- Gender inequality in Sierra Leone is one of the worst globally. Women have no land rights and are not, or are underrepresented in land decision-making institutions.

In sum, The AF component will contribute to reduced vulnerability and increased adaptive capacity to respond to the impacts of climate change, including variability at local and national levels as well as on natural resources critical for sustaining agricultural production and increasing food security with respect to:

- Climate-proofed agricultural value chain (production, post-harvest and marketing) and climate resilient livelihood diversification
- Water control, security and management measures
- Enhancement of climate service infrastructure, delivery and warning in agriculture

2.7 Environmental and Social category

The potential environmental and social risks posed by the AVDP project are limited and constrained to feeder road rehabilitation, rice production, small-scale irrigation and drainage, fertiliser usage and agricultural rehabilitation of cocoa and oil palm. The project will not have any negative impacts such as the involuntary taking or restriction on the use of land resulting in physical or economic displacement or negatively affect indigenous peoples or sites of historic, religious or cultural significance. The project is rated as a '**Category B**' project, which means that no formal Environmental and Social Impact Assessment (ESIA) will be required. Further analysis and environmental management plans will however be mainstreamed throughout project design and implementation and be largely covered by the Adaptation Fund funded activities.

In terms of Climate Risk Assessment, the project has been classified as a **High-Risk category**. This classification is based on the fact that Sierra Leone is classified as one of the Least Developed Countries (LDC), least able to adapt to climate change. The project target group is totally dependent on climate-sensitive natural resources such rain-fed agriculture and it is vulnerable to the increase in unpredictable rainfall patterns and increases in temperature, all of which is also predicted to reduce climate suitability of high yield cocoa varieties by up to 40%.[49] Funding from the Adaptation Fund is expected to assist in addressing some the causes of the elevated vulnerability to climate change.

[48] Tappan, G. G., Cushing, W.M., Cotillon, S.E., Mathis, M.L., Hutchinson, J.A., and Dalsted, K.J., 2016, West Africa Land Use Land Cover Time Series: U.S. Geological Survey data release, http://dx.doi.org/10.5066/F73N21JF

[49] Götz Schroth et.al. (2016). Vulnerability to climate change of cocoa in West Africa: Patterns, opportunities and limits to adaptation. Science of the Total Environment 556, 231–241

3. LEGAL, INSTITUTIONAL AND REGULATORY FRAMEWORK FOR ESIA AND AGRI-BUSINESS IN SIERRA LEONE

3.1 Legal Framework

3.1.1 The Constitution of the Republic of Sierra Leone 1991

The 1991 constitution of the Republic of Sierra Leone clearly stipulated inclusion stating that 'the State shall promote national integration and unity and discourage discrimination on the grounds of place of origin, circumstances of birth, sex, religion, status, ethnic or linguistic association or ties[50].Under the economic objectives, the constitution guarantees the sustainable utilization of natural resources and reliance of the county on agriculture for food security. Although the constitution made no express mention of the environment, the constitution stated that the State shall within the context of the ideals and objectives for which provisions are made in this constitution: harness all natural resources of the nation to promote national prosperity and an efficient, dynamic and self-reliant economy; manage and control the national economy in such a manner as to secure maximum welfare and freedom of every citizen on basis of social justice and equality of opportunity; protect the right of any citizen to engage in any economic activity without prejudice to the rights of any other citizen to participate in areas of the economy; place proper and adequate emphasis on agriculture in all its aspects so as to ensure self-sufficiency in food production[51].

3.1.2 The Environment Protection Act, 2000[52]

The National Environment Protection Board was established by the Environment Protection Act, 2000. The function of the Board include: (a) facilitate coordination, cooperation and collaboration among Government Ministries, local authorities and other governmental agencies in all areas relating to environmental protection; (b) review national and sectoral environmental policies and make such recommendations or proposals it may think necessary to the Minister; (c) review environmental impact assessments prepared pursuant to this Act and make appropriate recommendations to the Director; (d) investigate or cause to be investigated, any activity, occurrence or transaction which it considers is likely to have or result in harmful consequences to the environment and advise on measures necessary to prevent or minimize such consequences. (e) advise the Minister on areas of environmental protection and control requiring special or additional measures, indicating the priorities and specific goals to be achieved; (f) undertake or cause to be undertaken specific studies and research aimed at developing strategies for the protection of the environment and make appropriate recommendations to the Minister; and (g) consider any other matters which may be referred to it by the Minister and make appropriate recommendations or proposals thereon[53].

According to the Act, projects that require the submission of an Environmental Impact Assessment (EIA)[54] report related to the AVDP include sub-projects whose activities involve the following, among others:

- substantial changes in renewable resource use (e.g. conversion of land to agricultural production, forestry or to pasture land, rural development, timber production);
- substantial changes in farming and fisheries practices (e.g. introduction of new crops, large scale mechanization or use of chemicals in agriculture);
- infrastructure (e.g. roads, bridges, airports, harbours, transmission lines, pipelines, railways);

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[50] Section 6(2) of the 1991 constitution of the Republic of Sierra Leone

[51] Section 7(1a-d) of the 1991 constitution of the Republic of Sierra Leone

[52] The Environment Protection Act, 2000. Supplement to the Sierra Leone Gazette Vol. CXXXI, No 14 dated 2nd March, 2000

[53] The Environment Protection Act, 2000, Part II (4a-g)

[54] See first schedule of the Environmental Protection Act 2000

- exploitation of hydraulic resources (e.g. dams, drainage and irrigation projects, water basin development, water supply);

3.1.3 The Sierra Leone Meteorological Agency Act, 2017[55]

The Sierra Leone Meteorological Agency was established by the Sierra Leone Meteorological Agency Act 2017 to serve as the sole authority for the provision of meteorological and climatological services throughout the country. The responsibility of the agency, among others, include to: Advise government on all aspects of meteorology, climatology, climate change and other climate related issues; Promote the use of meteorology in agriculture, food monitoring and in the monitoring of flood, drought, desertification and other related activities; Monitor the meteorological and climatological components of environmental impact assessment, pollution, degradation and other concentrations; Keep in an appropriate and safe archive all meteorological, climatological, climate change data and information for use on future planning, research and implementation of projects as may be necessary; Provide meteorological information, advice and warnings for agriculture, civil and military aviation, surface and marine transport, operational hydrology and management of energy and water resources in order to mitigate the effects of natural disasters such as floods, storms, and drought and disease outbreak[56].

3.1.4 The Forestry Act, 1988[57]

The Act stipulates that the duties of the Chief Conservator as the Implementor of this Act shall include, among others: promoting and assisting the practice of forestry in agricultural, pastoral and other areas of the country in order to ensure the continued local supply of forest products and the protection of soil and water resources. According to this Act, no person in a national or community forest shall cut, burn uproot, damage or destroy any tree, remove any timber or other forest produce, clear any land, build any road or structure, take any earth, clay, sand, gravel or stone, cultivate any crop, graze any animal, or conduct any forest operation except pursuant to a concession agreement, contract of sale, licence, confirmed usage right or other authority under this Act. The Chiefdom Council of any Chiefdom may conclude an agreement with the Chief Conservator providing for the constitution as a community forest of any land within the Chiefdom, subject to the approval of the District Officer for the District in which the land is situated. The Forestry Division shall provide all necessary advice and assistance for the management of community forests, including the preparation of a management plan for any community forest which the Chiefdom Council may request.

3.1.5 The National Youth Service Act, 2016[58]

The National Youth Service Act of 2016 highlights the importance of youth participation in agriculture and environment sectors which are important to the Sierra Leone economy. The Act stipulated that Service Corps members shall be deployed in the public and private sectors including: agriculture, fisheries and marine resources, mining, environment, education, health and sanitation, social services and community developments, engineering, surveying and mapping and any other sector as or project as the minister may determine[59].

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[55] Sierra Leone Meteorological Agency Act, 2017. Supplement to the Sierra Leone Gazette Vol. CXLVIII, No 64 dated 28th September 2017

[56] See section 12 (2a-p) of the Sierra Leone Meteorological Agency Act, 2017

[57] Forestry Act of 7th July 1988. Supplement to Sierra Leone Gazette Vol. CXIX No. 38

[58] The National Youth Service Act, 2016. Supplement to the Sierra Leone Gazette Vol. CXLVII, No 147dated 24th March, 2016

[59] See he National Youth Service Act, 2016 section 34 (a-j)

3.2 Institutional and Policy Framework

3.2.1 The National Land Policy for Sierra Leone, 2015[60]

The new Sierra Leone Nation Land Policy drafted in 2015 has among its objectives: to ensure the security of tenure and protection of land rights to all landholders regardless of their own form of land tenure. As part of the strategy towards guaranteeing and protection of land rights, it requires the government to, among others, address the existing gender inequality and ensure that both men and women enjoy equal rights to land before marriage, in marriage, after marriage, and on succession to rights in land as provided for under customary law, and shall ensure the harmonization of the two regimes (freehold/lease in the Western area hold and community ownership in the Districts) under which land is held in Sierra Leone. It also requires government to ensure that women are accorded the same right and equal protection as men in civil law generally, and in law of succession in particular as the customs and traditions permit, including equal capacity to acquire and maintain rights in property , independently or in association with others regardless of their marital status; repeal any law that discriminates against women on the basis of gender or marital status; pass legislation to eliminate customs and practices that discriminate in work, business, public affairs and participation in decision making in matters that affect their rights generally; and institute the right to affirmative action for women for the purpose of redressing the imbalances created by history, tradition and custom.

In terms of land management, the policy mandated government to ensure the sustainability of land for agricultural development programme; and the Ministry of Agriculture shall develop comprehensive training in land-use and capacity assessment for trainers of small farmer organizations to facilitate best practice in land resource management. It also mandated government to promote tree plantation projects in deforested areas, support village community forests development initiatives, and promote re-afforestation and conservation measures. It encourages preparation of participatory environmental action plans by communities and individuals living in environmentally sensitive areas, introduce incentives to encourage the use of technology and scientific methods for soil conservation, encourage use of traditional soil conservation methods, put measures in place to control degradation of land through abuse of inputs and inappropriate land-use practices, and put in place institutional mechanisms for conservation of quality of land for environmental conservation purposes.

3.2.2 National Sustainable Agriculture Development Plan 2010-2030[61]

The new vision of the Ministry of Agriculture, Forestry and Food Security (MAFFS) is to "make agriculture the 'engine' for socio-economic growth and development". Mainstreaming cross-cutting themes including gender and youth promotion, farmer health care issues (including HIV/AIDS, IVS sicknesses and hazards, malaria, etc.) and natural sustainability is one of the cardinal objectives to achieve the vision which is driven by the National Sustainable Agriculture Development Programme (NSADP). The policy document identified the key agricultural sector challenges to include: expert crisis, declining soil fertility, low technology input, agricultural infrastructure, value chain and value additions, input and output marketing, financial services, technology access and farmer empowerment, formal farmer based organisation, access to land, tax structure, investment policy, fisheries, weak sector coordinating mechanism, gender and youth in agriculture, and nutrition diversification and farmer health.

The policy's Agenda for Change and Agriculture Sector Vision is anchored on:

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[60] National Land Policy for Sierra Leone, November 2015. Ministry of Lands, Country Planning and the Environment.

[61] National Sustainable Agriculture Development Plan 2010-2030: Sierra Leone's Comprehensive African Agriculture Development Programme. Version Adapted by CAADP Compact 18th September 2009, Freetown

- Increasing agricultural productivity (intensification and diversification) in particular among the rural poor smallholders who constitute the poorest segment of society, through a variety of support measures along the entire agricultural value chain, from pre-planting to marketing
- Promoting commercial agriculture through private sector participation
- Improving agricultural research and extension delivery systems
- Promoting efficient and effective sector resource management systems
- Mainstream cross-cutting issues in agriculture including self-sufficiency (e.g. no dependency), gender, youth employment, farmer health (including HIV/AIDS) and environmental sustainability
- Managing and exploiting Sierra Leone's fishery and marine resources
- Managing and exploiting Sierra Leone's forestry resources including the importance of conserving the now depleted forests of Sierra Leone.

The focus Commodities which has been identified on a national basis are: rice, cassava, oil palm, fisheries (especially artisanal) and non-timber forests products. These are commodities widely managed by the poorest but with potential for growth and contribution to poverty reduction and food security.
Funding remains a formidable challenge as The NSADP/CAADP requires a total outlay of USD 333.5 million for its implementation in the first five years (2010 – 2015) with a funding gap of USD 223million.

3.2.3 National Environmental Policy (Revised October 1994)[62]

The goal of the National Environmental Policy is to achieve sustainable development in Sierra Leone through sound environmental management. The policy objectives are to: secure for all Sierra Leoneans a quality of environment adequate for their health and well-being; conserve and use the environment and natural resources for benefit of present and future generations; restore, maintain and enhance the ecosystems and ecological processes essential for the functioning of the biosphere; preserve biological diversity, and the principle of optimum sustainable yield in the use of living natural resources and ecosystems; raise public awareness and promote understanding of the essential linkages between environment development, and encourage individual and community participation in environmental improvement efforts.

The strategies include:

- To establish and/or strengthen environmental protection standards, monitor changes in, and publish relevant data on; environmental quality and resource use;
- To make prior environmental impact assessment (E.I.A) of proposed activities which may significantly affect the environment or use of a natural resource and to provide relevant information, in a timely manner, to persons likely to be significantly affected by a planned activity and to grant them equal access and due process in administrative and judicial proceedings;
- To promote environmental management through the creation of administrative and infrastructural support with appropriate financial backing;
- To coordinate in good faith with other countries and agencies to achieve optimal use of transboundry natural resources and effective prevention or abatement of transboundry environmental protection.

The policy also specifies sector-specific policy direction to land tenure, land use and soil conservation; water resources; forestry and wildlife; biodiversity and cultural heritage; and gender and environment, among others.

3.2.4 Sierra Leone Land Degradation Neutrality National Report[63]

The government of Sierra Leone has remained committed to the UNCCD since it signed and ratified the convention in September 1997. The country has expressed its commitment to set voluntary Land

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62 National Environmental Policy Revised Edition 1994

63 Sierra Leone Land Degradation Neutrality National Report, UNCCD National Focal Point Ministry of Lands, Country Planning and Environment Environment Division Freetown

Degradation Neutrality (LDN) targets and identified design and implementation partners (including IFAD) with whom collaboration could be developed. The set targets are:

- Target 1: By 2030, promote reforestation through agro-forestry and sustainable land management practices, and the implementation of alternative livelihood schemes to restore 175 Sq. Km originally forested land in 2000 that has changed or lost its forest cover by 2010.
- Target 2: By 2035, ensure the rehabilitation of 12,237 sq.km of land area suggested as having declined, shown early signs of decline, or stable but stressed conditions in net productivity between 2000 and 2010.
- Target 3: By the year 2030, improve the productivity of 1,864 Sq.km of land area covered by shrubs, grasslands and sparse vegetation through controlled grazing, avoiding overgrazing, and adopting wild bush fire management practices.
- Target 4: By 2030, improve the productivity of 8,464 Sq. km of croplands through sustainable land management practices, agro-forestry and the establishment of green corridors in large scale commercial farms.
- Target 5: By 2035, implement wetlands conservation measures in order to improve 330 Sq. Km of wetlands showing decline, early signs of decline or stable but stressed conditions in net land productivity dynamics.
- Target 6: By 2023, implement land reclamation and rehabilitation programmes in the dredged mined-out areas degraded by Sierra Rutile mining Company.

3.2.5 Sierra Leone National Action Plan to Combat Desertification and Land Degradation

The first Sierra Leone National Action Plan (NAP) was formulated in November 2004 in fulfilment of the requirements of the UNCCD under the convention's Articles 9 and 10. The NAP was adopted by a broad range of stakeholders including representatives from Ministries, Departments and Agencies, Local Governments Institutions, Civil Society Organizations, Non-Governmental Organizations, Private Sectors and Academic and Research Communities. The Sierra Leone NAP 2014-2018 is formulated in support to the UNCCD strategy 2008-2018 to more effectively implement programs and projects to reverse and prevent desertification and land degradation, and mitigate the effects of droughts in order to contribute to poverty alleviation, improve livelihoods of people and achieve environmental sustainability. The NAP 2014-2018, therefore, is a working document for the synergy among the three Multilateral Environmental Agreements (MEAs) on biological diversity, climate change and land degradation at the country level, and the convergence of actions among Ministries, Department and Agencies (MDAs), local government authorities, the private sector and the civil society organizations (CSOs) to contribute to poverty reduction and environmental sustainability. The short to medium operational plan of SNAP include: creation of livelihood to affected population; sustainable use and management of affected ecosystem; and formulation of a national adaptation platform to climate change for food security and improved resilience.

3.2.6 EIA Guidelines for the agricultural Development

The draft EIA guidelines for the Agricultural Development document was prepared by the Environmental Protection Agency Sierra Leone (EPA-SL) under the Environmental Governance and Mainstreaming Project (EGMP) to guide developments in the agricultural sector. The 63 pages document covered: the screening criteria for environmental assessment for agricultural sector investments; scope of Environmental Impact Assessment (EIA), systematic procedures on Environmental Impact Statement (EIS) preparations, and guidelines on common potential impacts and mitigation measures.

The document recognizes that about 75% of Sierra Leones labour force is engaged in agriculture that is predominantly small-scale (most farms are less than 1.7 ha in size), with farmers that produce over 80% of the agriculture output operating farms using low inputs and rudimentary technologies. It also recognizes that Sierra Leone's agriculture contributes to wide spread environmental degradation through poor management practices due to slash and burn practices and most farmers are not aware of the linkage between farm practices and environmental degradation. The management and control of pesticides in Sierra Leone is weak. The document outlines the basic steps in the EIA process including:

registration, screening, scoping, stakeholders' consultation, and detail EIA. Table 3.1 shows the scale of undertaking in agriculture and their level of assessments based on the EPA-SL EIA guidelines.

Table 3.1: Scale of Undertaking in Agriculture and their level of assessment

1.6.1.1.1 Activity/Undertaking	Scale and level of Assessment		
	Small Registration (Permit) [64]	**Medium PEA**[65]	**Large EIA Mandatory**[66]
I. CROP PRODUCTION			
7. Cereals, (Maize, Rice, Sorghum, Millet). Roots and Tubers (Cassava, Yam, Cocoyam)	<2ha (5 acres)	2-8.3 ha	Above 8.3 ha. (20 acres)
8. Vegetables (Tomatoes, Garden Eggs, Pepper, Chilli, Water Melon, etc.)	<0.8ha (2 acres)	0.8-8.3ha.	Above 8.3 ha
9. Horticulture Crops (Pineapples, Citrus, Avocado, Cut Flowers, Mangoes)	<4.2ha. (10acres)	4.2-8.3 ha	Above 8.3ha.
10. Industrial, Tree/Plantation Crops (Tobacco, Cotton, Kola Nuts, Oil Palm, Coconut, Rubber, Plantain, Banana)	<6.2 (15 acres)	6.2-16.6 ha	Above16.6ha. (40acres)
11. Root and tubers	<2 ha.	2-8.3	Above 8.3 ha.
12. Legumes/pulses	<2 ha.	2-8.3	Above 8.3 ha.
II. OTHER PESTICIDE RELATED ACTIVITIES			
1. Bulk storage of Pesticides	PEAR at all levels		
2. Transportation of Pesticide	PEAR at all levels		
4. Disposal of Pesticides ii) Pesticide Containers	PEAR at all levels		
ii) Unwanted Pesticides	EIA mandatory at all levels		
iii) Spray Tank Mixture	License required at all levels		
4. Registration of product	EIA mandatory through Dossier submission and evaluation		
III. IRRIGATION AND DRAINAGE			
1. Surface Irrigation (Basin, Furrow, Border)	<100 ha	100-1,000 ha	>1,000 ha
2. Overhead (Sprinkler, Drip) Irrigation	<100 ha	100-1,000 ha	>1,000 ha
3. Flood Recession (Flood Plain Farming)	<2ha Surface Area	2-10 ha Surface Area	>10 ha Surface Area
4. Ponds and Impoundments for Irrigation	<2ha Surface Area	2-10 ha Surface Area	>10 ha Surface Area
5. Dams and Weirs for Irrigation	<5 m Height	5-10 m	>10 m

Source: EPA EIA Guidelines for t**he Agricultural Development**

[64] Registration (Permit): Project not anticipated to result in any adverse environmental impact. Permit could be issued upon registration

[65] PEAR (Preliminary Environmental Assessment Report): Project with limited environmental impacts that can be routinely resolved through application of limited mitigation measures or design changes

[66] EIA Mandatory: Project with the potential for significantly far reaching environmental impacts detailed field study and review

According to the guidelines, the following areas are considered as environmentally sensitive areas where any agricultural undertaking shall require an EIA[67]:

- Wetlands (e.g., Mangroves, Estuaries and Lagoons)
- Ramsar sites or potential Ramsar site (Principally for conservation of birds but also includes wise use of wetland areas)
- Biosphere reserves (Internationally designated site as part of a global network combining both conservation and sustainable use of natural resources)
- Geological conditions (e.g. Earth Quake prone sites)
- National Nature Reserve (Nationally important nature conservation sites for biological or earth science interest)
- Highly erodible and marginally productive cropland (Areas along slopes with critical slope 17% and above with potentially unstable soils prone to erosion)
- Natural flood barriers
- World Heritage Sites (Protection of natural and cultural areas of outstanding universal value or areas of unique historical/archaeological or scientific interests)
- Site of Special Scientific Interest (SSSI) or potential (Special interest by reason of its flora, fauna, or geological or physiographical features).
- National Parks (Protection of wild and beautiful landscapes)
- Marine Nature Reserve (Conservation and protection of marine flora and fauna and sites of geological or physiographical interest).
- Areas which constitute the habitat of any endangered or threatened species of indigenous wildlife (flora and fauna)
- Areas Sacred Grooves/Cultural sites.
- Sources of Water Bodies and areas close to a water body (a minimum distance of 30m, aquifer recharge areas, areas with high water table (wells, boreholes, porous soil, etc.)
- Areas near Apiaries (honeybee sites), wildlife refuges, or parks, and
- Off-Reserves forests (riparian forests, hill forests, fire protection areas and buffers)

AVDP will take all necessary steps to avoid subprojects in environmentally sensitive areas.

3.2.7 Sierra Leone's Intended Nationally Determined Contribution (INDC)[68]

Sierra Leone has been ranked as the third most vulnerable nation (after Bangladesh and Guinea Bissau) to adverse effects of climate change with low capacity to adapt and rural population most affected because of high dependence on rain-fed agriculture and natural resource-based livelihoods. Sierra Leone is committed to mainstreaming inclusive green growth in her development process. The implementation of the INDC is expected to support the transition to low-emission development and climate resilient society. The document recognized that Agriculture is the most important source of CH4 emissions (86.67%), followed by the Land Use, Land Use Change and forestry (LULUCF- 5.631), and the LULUCF sector is the least significant source of CO_2 emissions by up taking 752,748Gg of CO2 in 2000. Total emissions from all sources and sectors and for all gases, GHG emissions are projected to increase to about 4.8MtCO2Eq in 2015 and to about 6.6MtCO2 Eq in 2030. Agriculture and Waste sectors are projected to emit between 95 to 98% of the projected national emissions from 2015 to 2030. Sierra Leone intends to maintain its low emission levels (close to the world average of 7.58 MtCO2e) by 2035 or neutral by 2050 by reducing her carbon footprint and by following green growth pathways in all economic sectors. This target will only be achieve with the availability of international support that will come in the form of finance, investment, technology development and transfer, and capacity building with substantial donor support estimated to about $ 900 million.

[67] These will move the AVDP to Category 'A' in terms of environmental risks. The AVDP will take all steps to avoid sub-projects in environmentally sensitive areas

[68] Sierra Leone's intended nationally Determined Contribution, EPA, Sierra Leone

3.2.8 National Resilience Priorities Report (NRP- AGIR), 2017[69]

The Global Alliance for Resilience (AGIR) Sahel and West Africa, is a framework that helps to foster improved synergy, coherence and effectiveness in support of resilience initiatives across the 17 Sahelian and West Africa countries. The Sierra Leone Government in collaboration with partners is committed to addressing food and nutrition crisis prevention and management through a number of policy directions that are contributing to resilience building for the most vulnerable population. The National Resilience Priorities Report recognizes Agricultural season, Cultivation of Staple Food below subsistence level, Shocks (sickness, food price increase, lack of production inputs, etc.), Gender lens to issues of food insecurity (with few women having limited access to land, tools and equipment which impact negatively on their capability to produce, process and market food) and the Ebola Viral Disease (EVD) as the main driving force behind cyclical food insecurity in Sierra Leone. The national resilience priorities rest on four pillars including: improve social protection for the most vulnerable communities and households in order to secure their livelihoods; strengthen the nutrition of vulnerable households; sustainably improve agricultural and food productivity, the incomes of vulnerable household and their access to food; and strengthening governance in food and nutrition security.

3.3 IFAD Guidelines

3.3.1 IFAD Safeguard Policies

The IFAD'S ten Environmental and Social Values and Principles are relevant to the AVDP project[70]. These social values and principles are:

- Address the vulnerability and adaptation needs for the rural poor
- Promote the sustainable use of natural resources and protection of key ecosystems.
- Focus on partnership-oriented initiatives for improved social and environmental quality
- Address environmental and social impact assessments of agricultural and non-agricultural activities in an integrated manner.
- Incorporate externalities and minimize social costs.
- Implement participatory approaches, with special emphasis on the role of women.
- Promote the development of Indigenous Peoples and other marginalized groups (pastoralists, hunters and gatherers).
- Promote environmentally sound agricultural and manufacturing processes.
- Ensure systematic environmental and social monitoring.
- Undertake Strategic Environmental Assessments

3.3.2 IFAD SECAP Procedure[71]

The objectives of the Environment and Social Impact Assessment Study in the IFAD's SECAP procedure are to:

- identify key linkages between rural poverty and environmental management and assess the potential environmental and social impacts of the proposed project on the natural resource base and livelihoods of communities in the target areas;
- explore and identify key options for advancing environmental and social sustainability; and
- Recommend key opportunities to influence IFAD support towards environmental

[69] Global Alliance for Resilience National Resilience Priorities Report 2017.

[70] https://www.ifad.org/documents/10180/a5e3ffcc-0ed7-4bc6-b523-39c25dc1edd8

[71] https://www.ifad.org/documents/10180/a36f992c-5e31-4fac-8771-404bea02796b

sustainability and climate smart development.

This ESMF is intended to provide options that would inform and thus improve decision making of the AVDP design. The key environmental, climate change and social issues to be addressed include: (i) challenges faced to meet its rural development and food security goals; (ii) the major environmental, climate change and social issues that have a bearing on IFAD operations in the country; (iii) the direct impact and multiplier effect the mentioned issues have on the resilience of ecosystems and productivity of land and crops, natural resource management and rural livelihoods; (iv) the scale of volatility and risks resulting from climate variability and change; and (v) regulatory frameworks which are related to rural development and environmental issues.

The results of the ESMF and subprojects ESIA are: (i) an assessment of the environmental (and social/economic/institutional) issues particularly in the agricultural and rural development sector; (ii) the identification of links with relevant ongoing initiatives; (iii) the provision of specific measures, recommendations including opportunities to optimize adaptation, environmental management and resource use; in the project area. These results will shed light on the important opportunities available to build resilience and adaptive capacity in the program/project under development.

The Key Principles to guide the ESMF and the subproject ESIA are to:

- Look beyond the traditional 'do no harm' safeguards approach to mitigating environmental, climate change and social risks towards 'doing good' through greater focus on sustainability and management of environmental (rehabilitating degraded lands, seizing adaptation/mitigation opportunities and transforming the underlying inequalities that undermine inclusive development, etc.) and social impacts and risks;
- Begin the ESIA with a scoping exercise with the objectives of identifying as much as possible the relevant social, environmental, and climate change issues, so that baseline data collection and impact assessment can focus on them.
- Place strong emphasis on identifying opportunities and develop an appropriate management plan to enhance results and impact;
- Identify and compare alternative scenarios to recommend realistic proposals for design mission consideration;
- Identify capacity needs required to effectively implement the environmental and social management plan;
- Produce a realistic monitoring plan, including appropriate change management processes.
- Engage affected communities and other interested stakeholders throughout the ESIA process, from scoping to review and comment on the final draft report prior to decision-making.

3.3.3 The IFAD Climate Change Strategy (2010)[72]

The IFAD's climate change strategy calls for the IFAD to more systematically respond to increasing demands from clients for technical support and innovation to better respond to climate change. This means analysing and addressing climate change challenges during the early stages of program and project design to build resilience and adaptive capacity. The strategy goal and purpose are to:

1. To support innovative approaches to helping smallholder farmers build their resilience to climate change
2. To help smallholder farmers take advantage of available mitigation incentives and funding
3. To inform a more coherent dialogue on climate change, rural development agriculture and food security

[72] https://www.ifad.org/topic/tags/climate_change/2154532

The main strategy output is a more 'climate-smart' IFAD, where climate change – alongside other risks, opportunities and themes – is systematically integrated into core programmes, policies and activities:

- On operations, climate change can be – and in many cases already is – factored into IFAD's operating model. This means incorporating it into our toolkit for the early stages of country programme and project design and for implementation.
- On knowledge, innovation and advocacy- IFAD will explore new arrangements for sourcing climate-related expertise, share ground-level experiences to ensure their application throughout IFAD-supported programmes, and continue our work to shape the global dialogue on climate change for smallholders.
- On resource mobilization, the focus is to make IFAD's expanding overall portfolio climate-smart. Increased supplementary climate funds will continue to be sought to deepen the integration of climate change into IFAD's core programmes and to cover the increased cost this implies.
- On internal organization, IFAD will make greater use of existing in-house skills and people, and will
- Implement a new organizational structure that brings together and increases its staff capacity on climate and the environment. It will also continue to demonstrate the values of environmental awareness internally.

3.3.4 The IFAD Environment and Natural Resource Management (ENRM, 2011) Policy[73]

Sustainable environment and natural resource management (ENRM) lies at the heart of delivering poverty reduction for rural people. Poor rural people face a series of interconnected natural resource management challenges. They are in the front line of climate change impacts; the ecosystems and biodiversity on which they rely are increasingly degraded; their access to suitable agricultural land is declining in both quantity and quality; their forest resources are increasingly restricted and degraded; they produce on typically marginal rain fed land, with increased water scarcity; energy and agricultural input prices are on a rising long-term trend; and declining fish and marine resources threaten essential sources of income and nutrition.

Environmentally damaging agricultural practices are a major driver of these challenges. There is growing concern over inappropriate approaches that drive excessive use of fertilizers and pesticides, pollution of waterways and aquifers, build-up of salt in the soil, water scarcity in major river basins, declining levels of groundwater and loss of crop biodiversity. Large parts of Africa rely on rainfed agriculture with little or non-existent use of organic or inorganic fertilizers, soil erosion and poor access to seed varieties. Weak governance, damaging policies and changing consumption patterns lie at the heart of this environmental degradation: poor rural people, including smallholders, are often disempowered and thus unable to sustainably manage natural resources; a lack of clear land access and tenure rights removes incentives to maintain natural assets; distorting trade policies and fossil-fuel and other subsidies are key drivers. The response requires an 'evergreen revolution', powered by sustainable agriculture that balances crop/livestock, fisheries and agroforestry systems, so that surplus inputs are avoided and soil fertility and ecosystem services are not compromised, while production and income are increased. Building on a growing body of evidence of the success of sustainable agriculture investments, there is a huge opportunity to further scale up multiple-benefit.

IFAD's ENRM stresses that project designs present new opportunities to improve systematic integration and scaling up of ENRM of the portfolio. Such integration can help IFAD to engage in new and strengthened partnerships with specialized entities for enhanced and effective responses to issues associated with natural resources and, climate variability and change. ENRM is at the core of delivering IFAD's poverty reduction and sustainable agriculture mandate because its target groups rely directly on the environment and natural resources for their livelihoods, and client demand for support for ENRM is increasing.

[73] https://www.ifad.org/topic/resource/tags/climate_change/2096936

3.3.5 Country strategic opportunities programme for Sierra Leone 2010-2015[74]

The IFAD targeting strategy in the Country Strategic Opportunities Programme (COSOP) 2010-2015 for Sierra Leone target group consists of smallholder farmers and landless rural households ready to abandon subsistence agriculture with the support provided by the programme. Special attention will be paid to ensure that the needs and priorities of more vulnerable groups such as woman-headed households and landless young people are taken into account. The key cross-cutting issues noted in the COSOP to be addressed across the strategic objectives include environmental soundness and natural resource management; gender mainstreaming, the pursuit of innovation; and knowledge management.

[74] https://webapps.ifad.org/members/eb/99/docs/EB-2010-99-R-12.pdf?attach=1

4. DESCRIPTION OF THE ENVIRONMENTAL, CLIMATE AND SOCIAL CONTEXT

4.1 Environmental Context

Sierra Leone is a relatively small country. It has a land mass of about 72,368 km^2 and is located within the Upper Guinean Rainforest eco-region. The climate of Sierra Leone is described as wet tropical, marked by distinct wet and dry seasons. Sierra Leone has nine major river systems from north to south including the Great Scarcies, Little Scarcies, Rokel, Jong, Sewa, Moa and Mano Rivers. The country is divided into four main relief regions: coastline, interior lowland plains, interior plateau and mountains, each of which can be subdivided into a number of ecosystems. The coastline or coastal plains is relatively gentle and comprises estuarine swamps, terraces, alluvial plains and beach ridges. The interior lowland plains extend from the coastal terraces in the west to the east of Sierra Leone, occupying approximately 43% of the land area. At the edge of the lowland plains are the interior plateaus, made up of granite that runs from the northeast of the country to the southeast. The integrity of all these natural ecosystems and also the various agro-ecosystems are vital to ensure the ecosystem services upon which the population of Sierra Leone depend[75].

Biodiversity loss is one of the major problems undermining sustainable development in Sierra Leone. Total forest cover in Sierra Leone amounts to 38% of total land area although only 5% is original forest cover. Annual deforestation between 1990 and 2010 has been at a rate of 20,000ha per year[76]. Agriculture comprises 48% of GDP and sustainable management of biodiversity has important implications for food security and poverty reduction. The main direct causes of land degradation in Sierra Leone are logging, firewood collection, mining, charcoal production, tree crop plantation, settlement expansion and the slash and burn practice used in shifting cultivation. The primary indirect causes are extreme poverty, corruption, low public awareness and weak institutions.

Forestry protection in Sierra Leone is very weak and facing constant threats posed by corruption, weak governance structures both at the legislative level as well as on the ground monitoring and sanctioning of illegal logging and general lack of awareness among farmers. MAFFS reported during the design mission, that protected areas and the 1km buffers are under constant threat from slash and burn practices and plantations. Slash and burn is a standard practice carried out by extremely poor farmers to clear land typically around 2ha for the cultivation of rice, vegetables, firewood and charcoal production.

4.2 Climate Change Context

Sierra Leone is characterised predominantly by a hot and humid climate with distinct wet and dry seasons. The wet season from May to October sees an average of 3000mm of precipitation with coastal areas receiving as much as 5000mm. The dry season is characterised by dusty, hot harmattan winds and drought conditions, with temperatures ranging between 25-27° and 22-25° during the wet season[77]. Seasonal rainfall in West Africa varies considerably on inter-annual and inter-decadal timescales, due in

[75] EU (2006) Sierra Leone - Country Environnent Profile

[76] FAO (2010). Global Forest Resource Assessment. Country Report Sierra Leone. FRA 2010/189.

[77] Republic of Sierra Leone (2012). Second National Communication on Climate change. http://unfccc.int/resource/docs/natc/slenc2.pdf

part to variations in the movements and intensity of the Inter Tropical Convergence Zone (ITCZ). Current mean annual rainfall however has decreased to its lowest levels since the 1960s.[78]

Sierra Leone is the third country worldwide least able to adapt to the adverse effects of climate change[79] after Bangladesh and Guinea-Bissau. Influencing factors include their high dependence on rain-fed agriculture and natural resource-based livelihoods. Farmers, while unaware of the meaning of climate change, have been found to already consciously adapt their farming practices. They have reportedly experiencing changes in rainfall patterns with rain in the dry season and dry periods in the rainy season. Climatic changes have manifested in more intense rainfall patterns with more frequent severe floods and seasonal droughts, late onset of rains, rising temperatures, particularly in the dry season, stronger winds including reports of local tornadoes, more intense thunderstorms and more frequent landslides.

Climate predictions estimate that maximum temperatures in Sierra Leone will increase inland by up to 2.6°C by 2060. [80] The country is predicted to see a reduction in climate suitability for cocoa production by up to 20% in the more suitable southern districts and up to 40% in the drier north-eastern upland districts by 2050.[81] High yield cocoa production is a temperature sensitive commodity and IFAD investments will face productivity challenges should the project support rehabilitating old or extending new plantations in areas that are on the fringes of suitable growing climate.

Projected climatic changes suggest that Sierra Leone will suffer increasingly reduced climatic suitability for cocoa crops over the next 30 years. Maximum temperatures will increase, while overall precipitation is not projected to change significantly, the annual rainfall pattern and intensity will. This could result in increased risk of droughts during the wet season and rain during the dry season. Increased intensity when coupled with land clearing means a greater risk of surface runoff and topsoil erosion, increased risk of river damage to road infrastructure and increased risks of landslides.

4.3 Social-economic and cultural context

Poverty remains widespread in Sierra Leone where the impacts of the decade long civil war are still felt 15 years on in the form of devastated social and physical infrastructure. In 2016 the country ranked 179 out 188 (0.420) in UNDP's Human Development Index (HDI). Poverty is widespread with 81.4% of the working population living on less than US$ 3.10 per day and 65% of people aged15+ are employed. Sierra Leone also has a 48% literacy rate for people aged 15 and older. Overall the country has one of the highest inequality levels globally, gender inequality is also rated as one of the world's worst.[82]

Sierra Leone's land sector is described as chaotic and increasingly unsustainable, with the main problems including inequitable access to and a shortage of, accessible land. The absence of a registration system, cadastral mapping and information, overlapping jurisdictions for statutory and

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[78] UNDP Climate change Country Profiles (undated) http://www.geog.ox.ac.uk/research/climate/projects/undp-cp/UNDP_reports/Sierra_Leone/Sierra_Leone.hires.report.pdf

[79] http://reliefweb.int/sites/reliefweb.int/files/resources/Climate_Change_Vulnerability_Index_%202014_Map.pdf

[80] http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country_profile&CCode=SLE&ThisTab=RiskOverview

[81] Götz Schroth et.al. (2016). Vulnerability to climate change of cocoa in West Africa: Patterns, opportunities and limits to adaptation. Science of the Total Environment 556. 231–241.

[82] http://hdr.undp.org/en/countries/profiles/SLE

customary law undermine rights and access to land. Customary practices for land ownership and inheritance discriminate against women and the lack of defined women's rights to land under communal ownership mean that women are not consulted in management, purchase or selling of land. Women are also not sufficiently represented in institutions that deal with land and the international conventions dealing with women's rights have not been translated into law or national policies. Violent conflict relating to land is not uncommon, but conflicts and competition over land also extend to between line ministries, local authorities and chiefdom institutions.[83]

[83] Republic of Sierra Leone (2015) National Land Policy.

5. REVIEW OF ENVIRONMENTAL, CLIMATE AND SOCIAL IMPACTS

5.1 Potential Environmental Benefits

The promotion of agri-businesses in tree and canopy crops, including oil palm and cocoa in already degraded lands and rehabilitation of abandoned plantations is expected to significantly improve the canopy agro-ecosystems with positive climate and environmental benefits. More climate and environmental provisioning services (including food and freshwater), regulating services (including carbon sequestration, flood and erosion prevention, land degradation prevention and restoration, water purification, soil remediation, and pollination), supporting services (including soil formation and nutrient cycling), and cultural services (including recreation and aesthetics), if done well, can bring environmental benefits. Such services will also enrich the biodiversity by creating new habitats and corridors for bird and animal populations. The mitigation monitoring strategy will ensure the preservation of virgin forests and wetlands. Adopting agroforestry (retaining trees in farmlands) and mixed cropping (with cover crops and anchor crops) will increase soil fertility, prevent erosion and reduce the usage of pesticides and agrochemicals, resulting in an overall cleaner and safer environment.

5.2 Potential negative environmental impacts

5.2.1 Deforestation and land degradation issues

Expanding tree crop plantations as a result of project activities could result in direct deforestation through tree crop farms expanding into forest land, or indirect deforestation where new tree crops displace other vegetable crops in the same farm, which in turn cause deforestation. In partnership with the Adaptation Fund and FAO, the project will build in safeguards through carrying out regular mapping of plot sites and monitoring of land use and forest cover by third party service providers. The maps generated will be compared with FAO's new database on protected forests to ensure that IFAD activities will not cause direct or indirect deforestation of designated protected forests.

5.2.2 Road construction and rehabilitation impacts:

The rehabilitation of feeder roads are essential to sustain the market linkages of the core commodity value chains supported by the AVDP, but also to community and local economies at large. Lessons have been learned from the Rehabilitation and Community-based Poverty Reduction Project (RCPRP) project that greater attention needs to be paid to the environmental impact of such infrastructure projects to avoid obstructing IVS drainage areas which cause water logging of otherwise arable land. The AF will support the carrying out of Environmental Assessments that will be conducted in accordance with EPA procedures to ensure planned activities such as culverts are included in the design and implementation of the feeder roads. The EPA will also be invited and supported to conduct minor infrastructure construction to ensure compliance with the ESMF mitigation plans. The project is not planning to build 250 km in continue but to rehabilitate feeder roads with a total length less than 10 km for each. In accordance with IFAD's Social Environment and Climate Assessment Procedures (SECAP), the SECAP note is sufficient to provide technical guidance at this stage for all roads less than 10 km and no ESIA is required as not resettlement/destruction of natural habitat are planned.

5.2.3 Pollution from Agrochemical use

One of the potential environmental impacts is that of incorrect agrochemical use. Fertiliser use is limited in Sierra Leone but for rice farmers it is made available by MAFFS through a one bag for two bushels of rice basis. Farmers receive FFS training in agrochemical use although interviews with District Agricultural Officers (DAOs) revealed that farmers are still over-applying fertilisers and applying them at the wrong

time, for example on already green rice instead of growing shoots in the mistaken belief that this will further improve rice productivity, instead of damaging it. Based on the experience with the Tree Crops Extension Project (TCEP) in Liberia and with the support of the AF, the AVDP will partner with MAFFS through a MoU to train a lead farmer per community to educate and monitor his or her community members on the correct application of fertilisers to reduce crop damage and fertiliser waste, reduce indirect GHG emissions and improve productivity. Youth will also be encourage to create gainful employment and business value chain in fertilizer and agrochemicals application.

5.2.4 Dam construction

In order to reduce farmer vulnerability to rain-fed agriculture and hereby climate change, the AF will support the upscaling of GEF supported earth dam pilots under the RCPRP. This will aim to provide a perennial source of water hereby typically supporting 120 farmers per dam to double or triple crop rice in 10ha each of land in the more arid upland regions. The construction of the new earthen dams will be based on the lessons learned from the pilot, which included structural problems of overflow due to a miscalculation of water quantities and causing flood damage. Other problems have included dams running dry during the dry season or dams being located too far from the IVS. These are all problems that have been identified and could have been avoided. The lessons learned will be incorporated into the new AVDP design through the usage of improved materials and improved site selection and design, previously constructed dams will also be repaired.

5.2.5 Climate change issues

Projected climatic changes suggest that Sierra Leone will suffer increasingly reduced climatic suitability for cocoa crops over the next 30 years. Maximum temperatures will increase and while overall precipitation is not projected to change significantly, the annual rainfall pattern and intensity will. This could result in increased risk of droughts during the wet season and rain during the dry season. Increased intensity when coupled with land clearing means a greater risk of surface runoff and topsoil erosion, increased risk of river damage to road infrastructure and increased risks of landslides

5.3 Potential social benefits

AVDP will target about 33,000 direct beneficiaries drawn from smallholder farmers, FBOs including cooperatives, partnering financial institutions, small scale rural entrepreneurs, women and rural youth (18 – 35 years). It is expected to reduce unemployment especially among the youth, reduce poverty and create wealth and income, improve the food security situation, improve access to social (health and education) and financial services and reduce travel time especially among the teeming rural population. Rehabilitation of rural feeder roads and farm tracks will improve the life and livelihoods of more indirect beneficiaries of the project through savings in transport cost, post-harvest losses and access to the market. Hundreds more will directly benefit through short term labour, as contractors, and as construction supervisors.

5.4 Potential negative social impacts

5.4.1 Land Access issues

Security of tenure remains by women and youth remains a challenge in Sierra Leone. Without secure ownership or at least guaranteed access to land for women and youth, the development of sustainable agri-enterprises will be extremely difficult, if not impossible and this could negatively affect the AVDP. The risk of being pushed out of the land leading to loss of investments after improvements have been made or even cash crops planted is high if the land is not appropriately secured or authorized by the relevant community and government institution.

5.4.2 Social Exclusion and Gender inequality

Sierra Leone has been described as one of the places with the highest gender inequalities[84]. Decisions in Sierra Leone especially in the Districts are made at community-level by leaders/traditional rulers or Paramount Chiefs who are men in consultation with a council of elders who are also mostly men. Women and youth are often not sufficiently represented even in making decision that affect them. Thus women and youth not only risk being marginalized in land access, but also when opportunities or slots are allocated for economic activities in the community.

5.4.3 Unsafe and Non-Healthy Working Conditions

Working conditions across sectors are generally poor in the rural areas of the Districts in Sierra Leone because of general poverty, poor production methods, and limited awareness of and non-compliance with health & safety standards. In the agricultural sector, most farmers do back-breaking work and are regularly exposed to agro-chemical toxins from the overuse of fertilizer and pesticides. In addition, due to the high level of poverty, children often help in the production and/or processing of agricultural commodities. Cases of water-borne diseases among rice farmers in the IVS has been reported due to non-usage of protective/safety shoes.

5.4.4 Managing expectations and Conflicts resurgence

Generally since the end of the civil war, Sierra Leone has been very peaceful. However, poverty and deprivation among youth, if not properly addressed, has the risk of fuelling conflicts.

5.4.5 Elite Capture

Weak and non-transparent governance structures as well as exclusionary and divisive politics poses the risk of the AVDP being hijacked or captured by the political and administrative elite to benefit only their cronies with significant impacts on the target beneficiaries.

[84] M.T Pratt: The Economic Sense of Gender Equality. SiERRAEYE, Vol34, November-December 2017

6. ENVIRONMENTAL, CLIMATE AND SOCIAL MANAGEMENT PLAN FOR AVDP

6.1 Introduction

The environmental, climate and social management plans (ESMPs) presented below are relevant to the entire AVDP project, including the agri-enterprise and related infrastructure sub-projects whose locations are not yet known. However, for these subprojects, a separate screening as outlined in chapter 8 is still required. The outcome of this screening and subsequent review may lead to the development of more detailed, location- and project-specific ESMPs.

6.2 Responsibilities

MAFFs Steering Committee, will steer the programme planning and implementation including the implementation of the ESMF. Most of the AVDP activities are going to be carried out in the Districts. The existing IFAD NPCU, will implement the programme in partnership with District Government/District MAFFs, partner private sector entities and FBOs/Cooperatives. In the designation of responsibility both the NPCU and the MAFFS District Officers, other local district officers, service providers, EPA officers, farmers' organization and individual farmers are involved in the implementation of the ESMF.

6.3 Outline of the Management Plans

Tables 6.1 and 6.2 present the environmental and climate and social management plans. For each of the potential overall impacts described in chapter 5, the plans indicate a significance rating and (geographical) extent/prevalence of each impact, recommend mitigation measures, identify who is responsible for implementation of the mitigation measures, how implementation can be verified, and how frequently. The plans have been developed with input from a broad range of government ministries, department and agencies and other stakeholders consulted during the ESMF field mission in Freetown in June 2018. The recommended mitigation measures mostly apply to all the districts. It is important to re-emphasize that these management plans are relevant to the entire AVDP project, including the agri-enterprise and related (market) infrastructure sub-projects whose locations are not yet known. For these subprojects, a separate screening as outlined in chapter 8 is still required.

A copy of the environmental and management plans should be made available to all program staff, participating institutions and other key stakeholder representatives as well as used in community sensitization (i.e. awareness- raising and training) activities.

Table 6.1: Environmental (incl. Climate Change) Management Plan

Impact	Significance Rating (likelihood x consequence)	Extent / Prevalence	Recommended Mitigation	Responsibility for implementing mitigation	Means of verification	Timing / frequency of verification
ENVIRONMENTAL MITIGATION PLAN						
Deforestation (from tree crops especially oil palm plantation expansion into natural forest area) and upland crop production	High	All districts	▪ Strongly discourage new oil palm and cocoa plantation in and around virgin forest and forest regrowth areas ▪ Strong emphasis to be placed on rehabilitation of existing and abandoned oil palm and cocoa plantations ▪ Limit approval for new oil palm and cocoa plantations to already degraded land/degraded secondary bush areas or deforested areas ▪ Strengthen participation in the processing and marketing value chains to create more jobs especially for women ▪ Strengthen partnership with the forestry department to train farmers in sustainable agroforestry	NPCU and District MAFFS, Service Providers	▪ Percent decline in forest cover ▪ Number of people engaged in the processing and marketing value chains ▪ MOU with the forestry department ▪ Number of Training conducted with farmers on agroforestry techniques	Reference/baseline, Mid-term, End-Term Mid-Term, End-Term Mid-Term, End-Term Annual
Biodiversity loss (in IVS), Bush Fires/slash and bur agriculture	Medium	Kambia, Port Loko, Bonthe, Moyamba, Pujehun	▪ Limit cultivation of rice in the mangrove ecosystem to reduce mangrove forest loss ▪ Discourage slash and burn and train farmers on sustainable land preparation and development options ▪ Avoidance of areas that infringe on known migration patterns of protected, endangered or rare species and maintain known wildlife migration corridor	NPCU and District MAFFS, Service Providers	▪ Percent decline in mangrove forest ▪ Number of farmers that received training on sustainable land preparation and management ▪ Biodiversity surveys	Mid-Term, End-Term Quarterly Annual
Land and soil degradation	Medium	All districts	▪ Production of project-specific ESIA by contractors should be required for all feeder roads construction ▪ Train farmers and service providers on sustainable land development and preparation methods including zero or minimum tillage. ▪ Encourage crop intensification and discourage opening of virgin forest for cropping. ▪ As much as practicable, encourage mixed cropping of target crops with cover crops	NPCU and District MAFFS, Service Providers	▪ Production of project-specific ESIA for feeder road construction ▪ Number of farmers that received training on sustainable land preparation and management ▪ Consummated MOUs with Research Institutes and agencies dealing with soil	Annual Quarterly Mid-Term, End-Term

Impact	Significance Rating (likelihood x consequence)	Extent / Prevalence	Recommended Mitigation	Responsibility for implementing mitigation	Means of verification	Timing / frequency of verification
			and anchor crops (especially for oil palm at early stage) ▪ Involve partners from the Ministry and research institutes in training farmers on soil conservation techniques		conservation techniques	
Water pollution	Medium	All districts	▪ Minimize use of inorganic fertilizers and encourage use of biodegradable organic manures (especially in rice, maize and vegetable fields) and agrochemicals in cocoa plantations ▪ Consider training youth in sustainable agrochemical application as an enterprise to promote environmental-smart agricultural value chain	NPCU and District MAFFS, Service Providers	▪ Number of farmers that use organic manure instead of inorganic fertilizer ▪ Number of youth engaged in integrated agrochemicals and pesticides application enterprise	Annual Annual
Wetland (especially mangrove) degradation and removal	Medium	All districts	▪ Discourage removal and draining of mangroves for rice paddies and vegetable farming	NPCU and District MAFFS, Service Providers	▪ Percent decline in wetland	Reference/baseline, Mid-term, End-Term Mid-term, End-Term
Erosion and landslide/mudslide	Medium	All districts	▪ Encourage agronomic practices such as contour ploughing, terraces and bunds in erosion and landslide/mudslide prone hill-slope areas ▪ Encourage the planting of cover crops and anchor crops with the main crop ▪ Encourage buffers along river bank to prevent erosion ▪ Design and construction of roads, bridges and culverts to be properly monitored to prevent inappropriate termination that can lead to erosion	NPCU and District MAFFS, Service Providers	▪ No of farmers in erosion/landslide/mudslide prone areas adopting sound and sustainable agronomic practices	Mid-term, End-Term
Flooding (from rivers and possible over flow/collapse of the earthen dam), Water logging, soil salinization and alkalization			▪ Improve on the design of earthen dams in IVS using hydrological long-term(50-100 years) flood return periods to improve dam resilience ▪ Sustaining and improving on the partnership with the Meteorological Agency to improve their capacity to generate forecast of extreme rainfall events and disseminate climate information ▪ Consider introducing no regret option including crop insurance as part of the farmers and Agri-enterpreneurs' package ▪ Production of project-specific ESIA by	NPCU and District MAFFS, Service Providers	▪ Number of rainy season with no dam overflow ▪ Improved capacity of the Met Office to generate forecast on extreme events ▪ Number of agro-entrepreneurs receiving climate information ▪ Number of farmers that signed off unto agric insurance ▪ Result from soil analysis	Annual Quarterly Quarterly Annually Biennial

Impact	Significance Rating (likelihood x consequence)	Extent / Prevalence	Recommended Mitigation	Responsibility for implementing mitigation	Means of verification	Timing / frequency of verification
			contractors should be required for all feeder roads construction to prevent obstructing IVS drainage areas and causing waterlogging of rice fields ▪ Analyze soils and monitor changes that potential problems can be managed. Allow for access to channels from maintenance in design ▪ Provide water for leaching as a specific operation			
Agrochemical Waste proliferation	Low	All districts	▪ Consider creating a value chain/service provider in soil testing for fertilizer applications to improve place and context-based fertilizer and agrochemical application ▪ Encourage development and use of improved and resilient local crop varieties to reduce pest resistance and use of agro-chemical ▪ Training youth in sustainable application of agrochemicals enterprise as part of the value chain ▪ Encourage use of organic manures ▪ Service providers and agro-chemical input suppliers to follow high standard of security and safety precautions in storage and transport of agrochemicals	NPCU and District MAFFS, Service Providers	▪ Number of soil testing service providers ▪ Number of farmers using improved and resilient local crop varieties ▪ Number of youth trained and engaged in integrate pesticide and agrochemicals management as part of value chain ▪ Number of trained and certified agrochemical suppliers	Annual Annual Annual
Dry spell and Increase storm and wind activity	Moderate	All districts	▪ Sustaining and improve on partnership with the Meteorological Agency to improve their capacity to generate and disseminate agriculture-specific forecasts to farmers in good time through additional weather stations (to the 4 acquired through the GAFSP) and other appropriate weather data collection tools especially in the rural interiors ▪ Improve the capacity of the Meteorological Agency to collate and process climate data through appropriate Hardware, Software and mobility support ▪ In addition to agric extension officers, engage other means including farmers organization forum, community radios, text messages, transmitter broadcast (in remote areas) to disseminate weather and	NPCU and District MAFFS, Service Providers	▪ Number of additional weather station supported/established by the AVDP ▪ Central data processing server and mobility support for the Met Office ▪ Regular issuance of agro climatic forecasts issued by the Meteorological Agency ▪ Number of farmers receiving and using climate information ▪ Number of entrepreneurs that signed on to agricultural insurance	Annual Once Quarterly Quarterly Annual Quarterly

Impact	Significance Rating (likelihood x consequence)	Extent / Prevalence	Recommended Mitigation	Responsibility for implementing mitigation	Means of verification	Timing / frequency of verification
			climate information to farmers (possibly in local languages) ▪ Integrate use of traditional forecasting knowledge through regular feedback from farmers ▪ Consider introducing no regret option including crop insurance as part of the farmers and Agri-enterpreneurs' package ▪ deliver training and agricultural inputs in good time to assist farmers to adjust and adapt their planting and harvesting methods and timing		▪ Number of feedbacks from farmers/farmers organization on climate information	
GHG emissions from rice paddies	Moderate	All districts	• Discourage opening of new virgin forests and coastal mangrove wetlands • Train farmers on how to drain rice paddies in mid-season to reduce CH4 emission and improvement in nutrient management including the retention of rice residues • Encourage use of clean energy in processing activities	NPCU and District MAFFS, Service Providers	▪ Percent decline in forest and wetland areas ▪ Number of farmers traine in sustainable rice paddies management ▪ Number of processing units using sustainable energy	Reference/baselin , Mid-term, End-Term Annual Reference/baselin , Mid-term, End-Term

Table 6.2: Social Management Plan

Impact	Significance Rating (likelihood x consequence)	Extent / Prevalence	Recommended Mitigation	Responsibility for implementing mitigation	Means of verification	Timing / frequency of verification
SOCIAL MITIGATION PLAN						

Impact	Significance Rating (likelihood x consequence)	Extent / Prevalence	Recommended Mitigation	Responsibility for implementing mitigation	Means of verification	Timing / frequency of verification
Land tenure issues – role of paramount chiefs	High	All districts	▪ Advocate for the implementation of the new land policy to guarantee land tenure security for beneficiary farmers ▪ Massive sensitization across the districts and chiefdoms on land tenure and access to land for AVDP intended beneficiaries ▪ Engage with Paramount Chiefs to secure land for intending beneficiaries with no access to land ▪ Make access to land by women and youth one of the preconditions for a community to participate in the AVDP ▪ The project (through the NPCU and District MAFFS) to sign land guarantee and documented lease agreements with land owners for 10-25yeras for intending beneficiaries without access to land	NPCU and District MAFFS, Service Providers	Number of women ad youth participating in AVDP (from the project register Number of people without access to land participating in AVDP Secure land access and number of land lease agreement signed with land owners Attendance register of sensitization meetings with Paramount chiefs and other stakeholders	Quarterly Quarterly Every six month At every project activity
Gender inequality and targeting	High	All districts	▪ Spend enough time (at least 2-3months) for mobilization on targeting to reach everybody at community meetings (Do not leave selection of beneficiaries to the paramount Chiefs). Use the local media as well as local trusted NGOs ▪ Encourage active participation of women in the AVDP up to 40% as indicated in the PDR ▪ Engage women organizations and advocacy and right groups to mobilize women to participate ▪ Give some concessions/incentives to women farmers to enable them participate ▪ Encourage men through advocacy to support women participation through guarantee of land and other resources required	NPCU and District MAFFS, Service Providers	Minutes and Attendance register at community meetings Number of women and youth participating in AVDP (from the project register Number of women advocacy groups working with AVPD	At targeting mobilization meetings Quarterly Annually
Social exclusion of women and youth due to limited access to land	High	All districts	▪ Actively involve women and youth in all components and levels of decision-making within the project; ▪ Strive to maintain Project beneficiaries ratio of 40% women and 20% youth (men and women under 35 years old) ▪ Encourage the submission of business proposals from women-only groups (incl. cooperatives); ▪ Ensure women hold at least 30-40% of leadership posts in the farmer apex	NPCU and District MAFFS, Service Providers	Attendance lists Lists of approved projects and their beneficiaries Membership and staff lists Attendance lists at sensitization workshops and	At every project activity At business plan approval and every six months thereafter

Impact	Significance Rating (likelihood x consequence)	Extent / Prevalence	Recommended Mitigation	Responsibility for implementing mitigation	Means of verification	Timing / frequency of verification
			organizations and project management team; ▪ When organizing meetings or events, ensure they are appropriate to women's time and venue constraints; ▪ Access to land for women and youth should be a precondition for community selection/participation ▪ To avoid obstructionism ('blocking behaviour'), ensure men are included ('carried along') in sensitization activities. Work with locally-trusted CSOs in community sensitization (working towards 'attitudinal change') ▪ Make road and dam construction contractors to hire labour form the local communities to increase sense of belonging and participation ▪ Consider using local labour for farm tracks construction and rehabilitation instead of machines to increase number of indirect project beneficiaries		beneficiary / community feedback during site visits Community agreement on lan access for women and youth Number of community yout engaged as labour in road an dam construction and farr tracks rehabilitation	Every six month s At every project activity Annual
Managing expectations	High	All districts	▪ The AVDP project targeting and up scaling mechanism should be explicitly and transparently explained in the project implement manual (PIM) ▪ Selection criteria, what the project offers and expectations from intended beneficiaries should be explicit and unambiguous (and translated into the local languages so that everybody will be carried along) ▪ Carry the community and agro-entrepreneurs representatives along in the project implementation (and possibly the Paramount Chiefs or their representatives) in every stage of project implementation ▪ Maintain robust knowledge management and information dissemination to keep everybody abreast of happenings	NPCU and District MAFFS, Service Providers	Project implementation manual Project selection criteria in loca languages Knowledge management and communication material	Before project commencement 6months into project Quarterly
Unsafe and non-healthy working conditions	Medium	All districts	▪ Incorporate environmental and social guidelines in contracts with service providers and ensure compliance; ▪ Sensitize project beneficiaries and their wider communities on health & safety standards,	NPCU and District MAFFS, Service Providers	Contractor Guidelines Health & Safety flyer	Within 6 months of project start and half-

Impact	Significance Rating (likelihood x consequence)	Extent / Prevalence	Recommended Mitigation	Responsibility for implementing mitigation	Means of verification	Timing / frequency of verification
			incl. safe use of production, processing and transport machinery, agro-chemicals (pesticides and fertilizer), electrical installations and wiring (in particular in wet areas / during rains; ▪ Sensitization of selected communities on child rights and ensure that there is no child labour on selected agri-enterprise projects.		or poster Community meeting Community meeting	yearly review thereafter Within 6 months of project start, half- yearly thereafter Within 6 months of project start and half- yearly review thereafter Within 6 months of project start, half- yearly thereafter
Elite capture	Medium	All districts	▪ Detailed screening of business plan proposals on commercial viability, conflicts of interest and corruption. Exclude (use of) service providers owned by/tied to politicians or political parties; ▪ Ensure compliance with pre-approved, objective selection criteria and transparent information- sharing and decision-making ▪ Sensitize communities on project objectives, target groups, beneficiary selection criteria, and ▪ risk of elite capture ('hijack'); ▪ Agreement with traditional rulers and council of elders on community and beneficiary selection, and adherence to representative and transparent decision-making related to the project (via letter of understanding, MoU or another	NPCU and District MAFFS, Service Providers	Completed proposal screening forms Review missions Item on steering committee agenda Community meeting Agreement document	▪ During half-yearly review missions ▪ During half yearly committee meetings ▪ Monthly during first months, quarterly thereafter ▪ Within 6

Impact	Significance Rating (likelihood x consequence)	Extent / Prevalence	Recommended Mitigation	Responsibility for implementing mitigation	Means of verification	Timing / frequency of verification
			appropriate format). Involve locally-trusted CSOs.			months of start of project
Loss and Disturbance of Cultural Resources such as sacred forest and archeological site	Low	All district	▪ Do not approve projects to located in or around sacred forests and community groves and archaeological sites	NPCU and District MAFFS, Service Providers	Inventory of cultural resources	▪ Annual
Conflict resurgence	Medium	All districts	▪ Maintain robust knowledge management, information dissemination and community engagements to keep everybody informed ▪ Develop a clear complaints, grievances redress and dispute resolution framework and make this known to all stakeholders ▪ Develop a clear and simple stakeholder engagement plan (SEP) (incl. communication/outreach strategy), particularly on project objectives and staffing (incl. who's responsible for what), criteria for community and beneficiary selection, community – project communication structure / methods, and grievance/conflict management; ▪ Keep relevant stakeholders informed about project progress on a regular basis; ▪ Involve youth and women leaders as well as respected elders in key project decisions and sensitization activities; ▪ Publicly disclose relevant information on contracts and payments; ▪ Encourage contractors / service providers to give employment preference to local community members ▪ Develop a code of conduct for all stakeholders ▪ Sensitize women and particularly youth on what it's like to be an agri-entrepreneur (give a realistic picture of economic, social and environmental benefits but also	NPCU and District MAFFS, Service Providers	Stakeholder engagement plan (SEP) Stakeholder meeting reports, project flyers Complaints register Meeting records, observation Service provision contract and employment lists Code of conduct Community meeting Knowledge management materials Number of local CSOs in partner with AVDP	Within 2 months of start of project Quarterly Quarterly At every project activity Upon award of contracts and after payments Within 6 months of project start At every project activity during first 6 months, quarterly thereafter Quarterly

Impact	Significance Rating (likelihood x consequence)	Extent / Prevalence	Recommended Mitigation	Responsibility for implementing mitigation	Means of verification	Timing / frequency of verification
			challenges and responsibilities). ▪ Involve locally-trusted CSOs in community sensitization ▪			Annually
Health						
Water borne diseases	Medium	All districts, especially in the Inland Valley Swamp	▪ Efforts to focus on inland valley swamp to protect farmers from schistosomiasis, a water-borne disease in flooded rice fields, with rice boots and medication	NPCU and District MAFFS, Service Providers	Sensitization materials Number of farmers using rice boots	▪ Annual
High cholesterol from palm oil	Medium	All district	▪ Encourage farmers group in the oil palm processing value chain to invest in 'modern' mechanical methods of extraction and processing which enhances processing, reduces drudgery and reduces cholesterol levels of palm oil for local consumption	NPCU and District MAFFS, Service Providers	Number of oil palm processing group that are using modern methods	Quarterly
Dust from road construction	Medium	All districts	▪ Road contactors to present an Environments and Social Impact Assessment with Management Plan for managing externalities as part of the bidding processing ▪ Consider using the Autoseal technology (a polymer based technology which hardens and can last for 5yeras or more) to help tackle the dust inhalation problem	NPCU and District MAFFS, Rural Infrastructure Engineer, contractors / Service Providers	Number of ESIA for road rural feeder road projects	Quarterly

6.4 Stakeholder Engagement, Community Sensitization and Expectation Management

Experience with previous IFAD and other economic and social investment projects indicate that stakeholder engagement and sensitization are of critical importance to project success. In the absence of clear communication with relevant stakeholders and appropriate sensitization of local communities, rumors, misinformation and speculation thrive, and accusations and tensions easily boil over into (violent) conflict w within and between communities. Therefore, for many of the potential environmental and social impacts, the management plans recommend the development of a stakeholder engagement plan with a clear communication strategy and the organization of community sensitization activities on a regular basis.

A stakeholder engagement plan (SEP) should include at least the following components[85]:

a) Principles, objectives and scope of engagement b) Regulations and (institutional) requirements
c) Summary of previous stakeholder engagement activities d) Stakeholder mapping and analysis
e) Strategies of engagement
f) Key messages and communication channels
g) Grievance mechanism (see also section 9.6 below)
h) Resources and responsibilities
i) Monitoring and evaluation

Community sensitization (i.e. awareness-raising and training) activities need to be clear, timely and culturally appropriate; this means that key messages need to be communicated in a format and language that is easy to understand, preferably by someone who speaks the local language and is familiar with local customs and sensitivities, and during a time that is convenient and sufficient for all key community groups, particularly women and youth. To ensure appropriate community entry and reach target groups most effectively and efficiently, it is advisable to also involve those civil society organizations that are already active in and trusted by the selected communities.

6.5 Grievance Management

Whenever a project causes negative environmental or social impacts there will be grievances (complaints) from people who are affected. "Having a good overall community engagement process in place and providing access to information on a regular basis can substantially help to prevent grievances from arising in the first place, or from escalating to a level that can potentially undermine project performance[86]

In order to reduce conflicts, a robust grievance / complaints mechanism that meets at least the following 'effectiveness' criteria should be instituted[87]:

a. *Legitimate*: enabling trust from the stakeholder groups for whose use they are intended, and being accountable for the fair conduct of grievance processes;
b. *Accessible*: being known to all stakeholder groups for whose use they are intended, and providing adequate assistance for those who may face particular barriers to access;
c. *Predictable*: providing a clear and known procedure with an indicative time frame for each stage, and clarity on the types of process and outcome available and means of monitoring implementation;
d. *Equitable*: seeking to ensure that aggrieved parties have reasonable access to sources of information, advice and expertise necessary to engage in a grievance process on fair, informed and

[85] Adapted from IFC (2007) *Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets* (IFC: Washington, D.C.), pp.164-168

[86] IFC (2007) *Stakeholder Engagement*, p.69 and p.72

[87] Office of the High Commissioner on Human Rights (OHCHR) (2011), *UN Guiding Principles on Business and Human Rights*(OHCHR: Geneva), pp.33-34

respectful terms;

e. *Transparent*: keeping parties to a grievance informed about its progress, and providing sufficient information about the mechanism's performance to build confidence in its effectiveness and meet any public interest at stake;
f. *Rights-compatible*: ensuring that outcomes and remedies accord with internationally recognized human rights;
g. A source of *continuous learning*: drawing on relevant measures to identify lessons for improving the mechanism and preventing future grievances and harms;
h. Based on *engagement and dialogue*: consulting the stakeholder groups for whose use they are intended on their design and performance, and focusing on dialogue as the means to address and resolve grievances.

IFAD has established a Complaints Procedure to receive and facilitate resolution of concerns and complaints with respect to alleged non-compliance of its environmental and social policies and the mandatory aspects of its Social, Environmental and Climate Assessment Procedures in the context of IFAD-supported projects. The procedure allows affected complainants to have their concerns resolved in a fair and timely manner through an independent process. Although IFAD normally addresses potential risks primarily through its enhanced QE/QA process and by means of project implementation support, it remains committed to: (i) working proactively with the affected parties to resolve complaints; (ii) ensuring that the complaints procedure is responsive and operates effectively; and (iii) maintaining records of all complaints and their resolutions[88].

The AVDP Project will as much as possible utilize every available grievances redress mechanisms including: associations (including farmers' associations/organizations) traditional council (Paramount Chiefs and elders), village square engagement (consisting of representatives of men, women and social groups), village general assembly, the project NCPU, etc.

[88] IFAD (2016) *Managing Risks to Create Opportunities. IFAD's Social, Environmental and Climate Assessment Procedures (SECAP)* (IFAD: Rome), p.12

7. Review of Environmental, Climate, Social Impacts of AVDP Sub-Projects

7.1 Potential Impacts and Recommended Mitigation for Agri-Enterprise Projects

7.1.1 Oil Palm Plantation Farming

Oil palm is naturally suited to all districts of Sierra Leone. Despite its long gestation period, oil palm in the long run can have a number of environmental benefits. Oil palm plantations significantly contribute to carbon removal from the atmosphere when fully grown (though has low carbon sequestration capacity when compared to natural forest). At maturity, the product from oil palm produces zero waste. Nevertheless, although oil palm cultivation is possible with zero tillage and requires less soil additives, it does require some forest clearing and removal of existing canopies to enable the young palms to gain access to sunlight. Oil palm production is highly vulnerable to bush fires especially at infancy and maturing stages.

Some of the recommended mitigation measures for oil palm farming include:

- As much as possible, discourage opening of virgin forest and forest regrowth for oil palm plantation, strongly emphasising the rehabilitation of existing and abandoned lands, degraded or deforested areas for oil palm plantations;
- Strengthen partnership with the forestry department to train farmers in sustainable agroforestry related to oil palm plantation
- Encourage the use of renewable and low-carbon energy sources during processing operations;
- Encourage more people (especially women) at the processing value chain
- Encourage farmers to sign on to agricultural insurance in case of fire

7.1.2 Cocoa Farming

Cocoa farming is ecologically suited to forest zones, especially in the Eastern and Northern provinces. It is very important priority crop in Kailahun, Kenema, and Kono in the Eastern Province, and Koinadugu and Tonkolili in the Eastern province.[89] Cocoa production without application of fertilizers requires clearing of virgin forest. Therefore, cocoa production enterprise can have a negative impact on forests. Cocoa requires some shade at the early stages of growth, thus it naturally adapts as an agroforestry farming method, whereby a reasonable proportion of the canopy is retained. This helps to substantially retain the ecosystem services. Cocoa production is highly vulnerable to forest fires especially in dry season. The climatology of cocoa is very complex; it requires heavy rainfall at infancy and growing stages, but less rainfall at the seed production stage. It thus has the risk of being affected by changes in rainfall and temperature.

Some of the recommended mitigation measures for cocoa farming include:

- Encourage the use of existing farms or fallow lands or abandoned plantations, as well as the adoption of early maturing varieties with organic manure to discourage the opening of virgin forests;
- As much as possible, create a fire buffer zone around the cocoa plantation;
- Encourage more entrepreneurs along the cocoa value chain including processing, transportation and marketing
- Encourage farmers to sign on to agricultural insurance.

[89] National Sustainable Agriculture Development Plan 2010-2030: Sierra Leone's Comprehensive African Agriculture Development Programme. Version Adapted by CAADP Compact 18th September 2009, Freetown

7.1.3 Rice/Legume Farming

Rice is Sierra Leone's most important staple food. It is grown across all the 16 districts of Sierra Leone.

- Upland and Inland Valley Swamp (IVS) Rice: is grown across the provinces.
- Boliland (grassland with wetlands) Rice: thrives in Bombali, Kambia and Port Loko in Northern Province, as well as throughout all the districts in the Southern province and Western Area.
- Mangrove Rice: is grown in mangrove wetland in Kambia and Port Loko districts in Northern Province and Bonthe, Moyamba and Pujehun districts in the Southern province.
- Riverine Rice: is grown in Bonthe and Pujehun in the Southern district.

Rice cultivation requires clearing of land and removal of virtually all the trees and plants to provide enough sunshine for the rice paddy. In addition to mangrove and wetland destruction, one important negative impact of rice cultivation is the emission of greenhouse gases (especially methane) from rice paddies. Although these can be reduced by periodically draining the rice paddies, farmers need to be trained on how best to do this. Higher temperatures can make rice sterile with low productivity, while rice production may impact on biodiversity, especially birds and rodents' population that feed on rice grain. Rice waste, which can constitute a nuisance to the environment, has the potential of being converted into animal feed. Rice cultivation requires agrochemicals and pesticide that can easily pollute water bodies.

Some of the recommended mitigation measures for rice farming include:

- Strongly discourage rice cultivation in the coastal mangrove swamps to forestall storm surges and disastrous flooding from the ocean.
- Train farmers on draining methods of rice paddies in mid-season to reduce GHG emission;
- Train farmers on improved nutrient management, including the retention of rice residues;
- Discourage excessive opening of virgin forests and wetlands for rice cultivation;
- Minimize the use of pesticides and agrochemicals and encourage the use of organic manure to reduce impact on waterbodies;
- Encourage the use of scare-crows and other innovative methods to dissuade birds, instead of bird traps and other methods that can negatively impact bird population;
- Encourage farmers to sign on to agricultural insurance.

7.1.4 Cassava, Sweet Potato and Ground Nuts

These crops are ecologically suitable throughout all districts of Sierra Leone and very popular among women farmers. Cassava in particular has the advantage of being adapted to different kinds of soil and ecological conditions and also drought tolerant and pest resistant. In low-lying areas cassava cultivation is highly susceptible to flooding, which destroys both the crop and cultivars. Nevertheless, cassava is vulnerable everywhere to bush fires. Cassava processing generates minimum waste, which can be converted into livestock feed.

Some of the recommended mitigation measures for cassava farming include:

- Avoid cassava farming in low-lying areas especially around river valleys to avoid flooding;
- Use early maturing cultivars;
- Create a fire buffer zone (a cleared perimeter) around farmland;
- Deliver training and agricultural inputs to farmers on-time to enable them to adjust and adapt their planting and harvesting methods and timing;
- Encourage farmers to sign on to agricultural insurance

7.2 Potential Impacts and Recommended Mitigation for (Market) Infrastructure Projects

The following are some of the (market) infrastructure projects likely to be embarked upon by AVDP Project

1. Construction and rehabilitation of feeder roads and farm tracks

2. Construction and rehabilitation, including culverts and bridges
3. Rehabilitation of Agro Business Centres (ABC)
4. Land development activities
5. Small scale (earthen) dams and irrigation schemes in the IVS

Some of the potential impacts of market infrastructure development include:

7.2.1 Land Access

Market infrastructure will require the availability of land resource for their provision. The arrangement made for land will go a long way in determining sustainability of market infrastructure. About 24,000 ha (12000 rehabilitated and 12000 new) of land is expected to be brought under cultivation and 600km of feeder roads to be constructed and 1800km of farm tracks. 20 earthen dams are expected to be constructed especially in the IVS. Land development, irrigation activities and road construction all require large expanse of land. Some preconditions for market infrastructure include assurance that government or the community has guaranteed the lease of land to the beneficiaries during the program life, and the development of strategies for the maintenance and sustainability of the infrastructure by the concerned parties.

7.2.2 Dust, Vibration, Mudslide and Noise

The degree to which individuals perceive dust to be a nuisance depends on the frequency, intensity and duration of a dust-generating event. Farmers usually engage in a variety of activities that uses equipment or practices that create dust. Most land clearing equipment generates some dust. Dust may also be generated as fugitive dust when fine particulates are lifted from fields, roads, buildings and yards via air turbulence. The main mitigation measures recommended for mitigating dust including dust protection masks for machine operators and the spraying of water to reduce the level of dust during construction and/or transport activities.

Heavy equipment used for road construction create ground movement such that cracks can occur in adjacent buildings. These can also create some form of discomfort to inhabitants of the surroundings. An assessment of surrounding buildings would be carried out to ascertain the level of susceptibility to cracks because of ground movement. The buildings are to be strengthened and compensation paid for damages where it is unavoidable. Noise from the use of equipment is also a major concern. Operators should only use construction equipment that produces a moderate decibel level and consider the times when people will experience less discomfort (i.e. day-time only). Because of the nature of the terrain in Sierra Leone, roads construction through hills and valleys are of environmental concerns to prevent landslide. Road construction contractors will be expected to produce Environmental Management Plans for road construction and conduct environmental screening for the construction of farm tracks.

7.2.3 Deforestation

The removal of vegetation cover and trees during construction can lead to deforestation, and should therefore be avoided as much as possible. Where tree removal is unavoidable, this should be compensated by tree and vegetation replanting along the constructed roads.

7.2.4 Ground Water Contamination

Unchecked and unmonitored underground exploration, for example during dams' construction, can lead to ground water contamination. Appropriate impact studies should be conducted prior *to* the construction of dams.

7.2.5 Flooding/ Erosion

Flooding and erosion can occur because of poor judgement and poor design and construction practices. Adequate drainage should be provided for surface water run-off. Vegetation cover should be provided for slopes. Unnecessary dug- outs and/or excavation of soil from its natural terrain should be avoided. Replacement of dug out soils should be carried out when necessary.

7.3 Environmental and Socio-Economic Management Framework (ESMF)

Table 7.1 provides a framework for managing the likely impacts of the various activities expected to be implemented during the key parts in the agricultural value chain, i.e. production, processing, marketing, transport (and supply). It is important to re-emphasize that these management plans are relevant to the entire AVDP project, including the agri-enterprise and related infrastructure sub-projects whose locations are not yet known.

Table 7.1 Environmental and Social Management Framework (ESMF) for Agricultural Value Chain Stages

Part in value chain	Key issue affecting the Environment	Potential impact				
		Environmental	Social & Institutional	Economic	Standard Mitigation Measures	Monitoring & indicators
Production	☐ Land preparation – land clearing, cultivation and other issues ☐ Use of earth-moving machines, e.g. tractors for clearing ☐ Use of agro-chemicals ☐ Use of pesticides	☐ Forest and wetland removal ☐ Land & soil degradation ☐ Water and soil pollution ☐ Flooding ☐ Erosion and mudslide ☐ Slash and burn / Bush fire ☐ Biodiversity loss ☐ Waste management ☐ GHG emission	☐ Increased youth, women and men employment directly and indirectly ▪ Increased youth, women and men interaction and cooperation ▪ Increased sense of pride and responsibility by participating youth and women ▪ Inter- and intra-community conflict on land ownership ▪ Possible agitation from youth not presently included in the programme and whose expectations are not properly managed ▪ Social exclusion especially lack of access to land by women and youth ▪ Possible loss of cultural assets	☐ Increased sales and household income ☐ Increased youth employment and social well-being ☐ Improved nutrition and food security ☐ Increased ability of women and youth to manage their enterprises in productive and profitable manner, thereby increasing GDP and manpower development ☐ Increased import substitution especially of rice ☐ But increasing associated environmental and social costs	☐ As much as possible, discourage the opening of virgin forest and wetlands ☐ Train farmers in sustainable land management practices to reduce environmental impacts ☐ Deliver training and agricultural inputs to farmers on-time to enable them to adjust and adapt their planting and harvesting methods and timing ☐ Adopt and enforce health, safety and environment rules at production sites to ensure clean, sustainable and environmentally friendly as well as climate-smart production processes ☐ Encourage full exploration of the value chain including creating service providers in soil testing and agrochemical services ☐ Develop a clear and simple Stakeholder Engagement Plan (SEP), incl. grievance mechanism, to manage expectations ☐ Actively involve women and youth in all components and levels of decision-making within the project	☐ Number of farmers that received training on sustainable land preparation ☐ Changes in forest and wetland ☐ Results from periodic soil and water analysis ☐ Heath, safety and environment manual ☐ Number of value chain enterprises around soil testing and agrochemicals management ☐ Stakeholder Engagement Plan ☐ Conflict resolution committee meetings ☐ Lists of approved projects and their beneficiaries ☐ A greement on land access for women and youth and land lease documents

Processing	☐ Use of processing machines	☐ Waste generation ☐ Air, water and land pollution ☐ GHG emission from machines	☐ Unsafe and non-healthy working conditions Possible use of child labourers	☐ Increased sales and household income ☐ Increased youth employment and social well-being ☐ Improved processing capacity, value additions and value chain development ☐ Improved nutrition and food security ☐ Increased ability of youth to manage their enterprises in productive and profitable manner, thereby increasing GDP and manpower development ☐ Increased import substitution of Rice ☐ But increasing associated environmental and social costs	☐ Encourage the use of renewable and low-carbon energy sources during processing operations ☐ Adopt health, safety and environment rules at processing sites ☐ Train farmers in sustainable agro-processing practices to reduce environmental impacts ☐ Step up knowledge management and information dissemination to showcase the achievement of the project	☐ Number of operators adopting renewable low carbon technologies ☐ Number of enterprises established focusing on processing ☐ Number of entrepreneurs adopting sustainable processing operations ☐ Knowledge management /communication plans, stakeholder meeting reports, communication project flyers/leaflets
Marketing	☐ *Construction of market infrastructure*	☐ Dust, smoke, noise, ground movement / vibration ☐ Deforestation ☐ Water pollution ☐ Flooding and erosion and mudslide from poorly constructed culverts, roads, etc.	☐ Better access to market ☐ Better access to production and processing sites by supervisory agencies ☐ Improved access to rural communities ☐ Conflict over land and demand for compensation where infrastructure is to be constructed	☐ Improved market penetration ☐ Access to market information and market linkage and support services ☐ Strengthened market value chain, with more profitable enterprises ☐ Improved storage and reduced waste and postharvest losses	☐ Use construction equipment with moderate decibel during construction ☐ Develop/adopt and enforce health, safety and environment rules at construction sites ☐ Lawful and willing consent of community/or individuals on land site for market infrastructure	☐ Observation of construction equipment for dust, noise, smoke, vibration, etc. ☐ Work inspection report on the environmental quality of market infrastructure ☐ Health, safety and environ

Transportation	• Use of motorized and heavy transportation machines	☐ GHG emission from transportation	☐ Influx of rural migrants to agri-enterprise sites and processing areas ☐ Increased number of service providers, which boost the economy	☐ Increased ownership of motorized and other transport system ☐ Increased number of service providers ☐ Increased GDP ☐ But increasing associated environmental and social costs	☐ Organize transport entrepreneurs into an association for easy management ☐ Develop a code of conduct, and health, safety and environment regulation for transport operators	☐ Code of conduct for transport operators ☐ Minutes of meetings of transport operators' association

7.4 Analysis of Alternatives

The traditional approach to cocoa tree crop farming in Sierra Leone has been by default organic farming, this has been primarily due to a lack of agrochemical availability. Based on the analysis of the approach thus far, the outcome has been to focus on high-yielding cocoa varieties. This has environmental implications of increased agrochemical use, the exhaustion of already poor soils and the excessive de-shading of natural forest trees. On the basis of this analysis the project decided to use climate resilient planting materials and intercropping instead of pursuing maximum yields.

Under the RCPRP project, farmers were encouraged to abandon the destructive shifting agriculture practice typically employed in the uplands. The abandonment of slash and burn was encouraged through the promotion of climate resilient rice growing in the IVSs. Slash and burn is practiced by the extremely poor farmers and involves blanket burning to clear forestland to grow rice, vegetables, produce firewood and charcoal. The AVDP design mission has discovered however that farmers working the IVS will still continue their upland agricultural activities for typically 40% of the time during the dry season. To discourage this, the project will introduce vegetable growing for the tail end of the growing season to discourage the continued environmentally destructive practices. Cultivation of Rice in the mangrove area is becoming popular because of the inherent fertility of the mangrove swamp. This has severe consequences with loss of mangrove which can lead to flooding and storm surges. AVDP will discourage the cultivation of land in the mangrove dominate wetland areas.

Oil palm is grown throughout all the districts of Sierra Leone. The traditional practice is to open up the virgin forest, cut the trees down and destroy them with fire or turn them to charcoal (another popular common ecosystem destruction livelihood activity). This is because oil palm requires a lot of sunshine to grow. The AVDP will only support the rehabilitation of abandoned oil palm plantation. It will only support new plantations if they are to be sited in already degraded areas or degraded secondary bush areas. No new plantation in virgin forest will be supported.

8. ENVIRONMENTAL AND SOCIAL SCREENING OF SUB-PROJECTS

8.1 Introduction: Screening and Review

The Environment and Social Risk Category of the AVDP is 'B' which means 'some adverse impacts can be readily remedied by appropriate preventive actions and/or mitigation[90]. However, to remain a 'B' Category Project serious attention has to be paid to Oil Palm cultivation (because of its huge potential to cause deforestation) and the construction of feeder roads considering the terrain in most districts of Sierra Leone.

During the implementation of AVDP, all sub-project proposals will be screened, first on eligibility on the basis of the 'letter of interest' / application form (see Annex 1), and secondly on the basis of environmental, climate and social impacts using the more detailed screening forms (see Annex 2). Project Screening for Environmental Impacts will ensure that sub-projects with high and irreversible impacts on the environment or people that cannot be readily mitigated are not eligible for support by AVDP.

Sub-project proposals with medium (manageable) environmental and social impacts should include the following basic elements in the application and contain in the project-specific ESMP:

- A summary and description of the possible adverse effects that specific sub-project activities may occur;
- A description of any planned measures to avoid or mitigate adverse impacts, and how and when they will be implemented;
- A system for monitoring the environmental and social effects of the project;
- A description of who will be responsible for implementing and monitoring the mitigation measures; and
- A cost estimate of the mitigation measures, which should be included in the sub-project proposal.

The scope of any environmental and/or social review and related mitigation measures will be determined by the relevant (environmental/climate change) NCPU staff in consultation with technical experts where needed, via the sub-project screening and approval process. Sub-project proposals with only minor or no adverse impacts do not need a separate review (or ESMP).

8.2 Screening for Eligibility

The AVDP PDR provides a detailed description of the targeting and selection process for beneficiaries. Annex 1 provides the proposed format for the letter of interest / application form, which should be completed by each intended beneficiary and will be used as the primary tool for screening for eligibility.

8.3 Screening for Environmental and Social Impacts and Climate Impacts

Based on relevant SECAP guidelines, two separate environmental and social screening forms have been developed: for agri-enterprise (Annex 2) and related (market) infrastructure subprojects (Annex 3), and climate screening form for sub-projects (Annex 4).The intended beneficiaries are only required to complete the intention/application form in Annex 1 while the screening is done using the form in Annex 2, 3 and 4 by the NCPU Environmental/Climate Change Officer (assisted by any Service Provider for

[90] Source: IFAD (2016) Managing Risks to Create Opportunities. IFAD's Social, Environmental and Climate Assessment Procedures (SECAP) (IFAD: Rome), p.18

that purpose).

Annex 5 provides environmental and social guidelines for contractors especially those handling the construction of market infrastructure such as the construction /rehabilitation of market-connected rural feeder roads. Sound environmental and social management of construction projects can be achieved only with adequate site selection and project design. As such, the ESMP for projects involving any new construction, or any rehabilitation or reconstruction for existing projects, should provide information as to screening criteria for site selection and design. The guidelines include the site selection, prohibitions, construction management measures, safety during construction, community relations, chance finds procedures and environmental supervision during construction.

8.4 Impact Significance Rating

In order to determine the significance of impacts, the likelihood of an impact occurring is considered against the consequence or magnitude of the impact if it was to occur. Likelihood is defined as the frequency of an impact occurring.

Table 8.1 Definitions of Consequence

Consequence	Definition
No Impact / No change	• No impacts on biophysical and social environments / livelihood / health / gender • No public concerns • No legal issues
Negligible	• Low/minor impact on environment / livelihood / health / gender • Minor social impacts • No legal issues
Intermediate	• Some level of impact on environment / livelihood / health / gender • Social issues apparent • May have legal implications
Severe	• High level impacts on environment / livelihood / health / gender • High public concerns or perceptions • Legal non- compliance
Unknown	• Extent of the impact cannot be determined at this point • Apply precautionary principle

Projects that have low significance impacts may not require a new ESMP; in that case the standard ESMP and ESMF in this report will suffice. In the case of project with medium significance, the development of appropriate plans, in addition to the standard ESMP and ESMF may suffice to manage the severity of the impacts. In the case of projects with impacts of high significance, a separate ESIA is almost always required.

9. MONITORING OF ENVIRONMENTAL, CLIMATE AND SOCIAL IMPACTS

9.1 Introduction

The overall objective of environmental and social monitoring is to ensure that recommended mitigation measures are incorporated, and that activities carried out during sensitization (i.e. training and awareness-raising) and infrastructure construction/maintenance are environmentally and socially acceptable, and therefore sustainable.

9.2 Key Performance Indicators

For the AVDP the performance indicators (as set out in Section 2.2) are:

- Goal: Total outreach - number of households receiving services promoted or supported by the project (25,667 at MTR and 33,000 at completion)
- Goal: Percentage of households that experience a reduction of hungry season from 4 to 2 months (50 per cent at MTR and 80 per cent at completion)
- PDO: Number of rural producer organisations engaged in formal partnerships/ agreements or contracts with public or private entities (100 at MTR and 300 at completion)
- PDO: Number of existing regulations/policies/strategies proposed to policy makers for approval, ratification or amendment (one at MTR and two at completion)
- Component 1: Percentage of persons/households reporting adoption of new improved inputs, technologies or practices (40 per cent at MTR and 100 per cent at completion)
- Component 1: Percentage of households reporting an increase in production (25 per cent at MTR and 100 per cent at completion)
- Component 2: Percentage of supported rural producers' organisation members reporting a decrease in post-harvest losses (30 per cent at MTR and 100 per cent at completion)
- Component 2: Percentage of persons reporting improved physical access to market, processing and storage facilities (40 per cent at MTR and 100 per cent at completion)

Various project impacts and aspects relate to these overall performance targets. When the activities and indicators are established, baseline data needs to be collected to serve as a benchmark and against which changes in the identified indicators can be measured. The types of parameters that can be monitored may include mitigation measures or design features, or actual impacts. In some cases, such as drainage structures and soil conservation interventions, monitoring is fairly straightforward and can be done as part of routine or periodic maintenance. However, other parameters, particularly those related to social, ecological and climate change issues can only be effectively assessed over a period of 2 to 5 years.

The monitoring plan in Table 9.1 lists the parameters to be monitored, activity that will generate the parameters, monitoring indicator, and responsibility, monitoring means, frequency and the estimated cost.

Table 9.1: Environmental and Social Monitoring Plan

Parameter	Activity	Monitoring Indicator	Responsibility for monitoring	Monitoring means	Recommended frequency of monitoring	Estimated Monitoring Costs (USD)[91]
ENVIRONMENTAL MONITORING						
Site specific ESIAs fo road construction	Environmental Screening and impact assessment	Baseline on status of the environmental conditions	NCPU-Environmental Officer, Market Infrastructure Engineer	ESIA reports Adherence to laid legal and policy requirements	Once (project specific)	49,180
Site specific ESIAs fo Earthen dam construction	Environmental Screening and impact assessment	Baseline on status of the environmental conditions	NCPU-Environmental Officer, Market Infrastructure Engineer	ESIA reports Adherence to laid legal and policy requirements	Once (project specific)	32,787
Site specific environmental screening (ES) for farm tracks	Environmental screening for farm tracks	Baseline status of environmental conditions	NCPU-Environmental Officer, Market Infrastructure Engineer	Environment Assessment report	Once (project specific)	29,508
Environmental baseline study	Environmental and social baseline for the project	General conditions of the entire study area	NCPU-Environmental Officer	Remote sensing and field assessment	Baseline	26,230
Land, soil and water degradation assessment (including waste and agrochemicals in land, soil and water) - two yearly	Assessment of soil, water, land and vegetation	Status of land, soil, water and vegetation characteristics including soil microorganism count and water quality	NCPU-Environmental Officer	Field investigations and Laboratory Analysis	Biennial	78,689
Forest and (mangrove) wetland deforestation assessment -two yearly	Assessment of forest and mangrove wetlands	Status of forests and mangrove wetlands	NCPU-Environmental Officer	Remote Sensing and Field survey	Biennial	78,689
Erosion/mudslide and flooding - two yearly	Assessment of soil erosion and flooding	Changes in soil/land resulting from soil erosion/mudslide and inundation	NCPU-Environmental Officer	Field measurement and laboratory test	Biennial	78,689
Biodiversity and Cultural Resources surveys - annually	Biodiversity survey	Changes in abundance of plan and animal biodiversity	NCPU-Environmental Officer	Field biophysical survey	Annual	157,377
Access to climate information and agro-decision makings and GHG emissions	GHG measurement and Survey of access to climate information and agro-decision makings	Level of access to climate information by rural small holders farmers Extent of GHG emission from rice paddies	NCPU-Environmental Officer	Social survey an field investigatio	Biennial	47,213
SOCIAL MONITORING						
Social / livelihood (SLA) baseline	Rapid appraisal of livelihoods of	Status of rural small holder	NCPU-Environmental	Social Surveys/Rapid	Once	52,459

[91] The estimated costs presented cover the monitoring expenses for all the 16 districts

	rural small holders farmers	farmers livelihoods	Officer and Gender Officer	rural appraisal		
Livelihood monitoring	Appraisal of rural livelihood improvements through AVDP	Status of rural small holder farmers livelihoods	NCPU-Environmental Officer and Gender Officer	Social Surveys	Annual	78,689
Other social monitoring	Engagement on land tenure and land access, gender, social exclusion, elite capture, monitoring conflict, managing expectations and health & safety issues.	Extent of project compliance with social safeguards	NCPU-Environmental Officer and Gender Officer	Social Surveys, meetings, trainings	Annual	65,574

9.3 Summary of Environmental and Social Monitoring Costs

Table 9.2 shows the summary of the monitoring costs among the monitoring activities shown on Table 9.1 for year 1 and the years 2-6 of the AVDP project life cycle.

Table 9.2: Summary of Environmental Monitoring costs

Monitoring Parameter	Unit cost (in USD)	Total for 16 districts	Year 1/2	Year 2 - 6
Site specific ESIAs for roads per district*	4,918	78,689	39,344	39,344
Site specific ESIAs for earthen dams per district	2,049	32,787	16,393	16,393
Environmental baseline study	1,639	26,230	26,230	
Environmental monitoring **	24,590	393,443	65,574	327,869
Survey climate information access and GHG emissions study -	2,951	47,213	23,607	23,607
Social / livelihoods baseline study	3,279	52,459	52,459	0
Livelihoods monitoring	4,918	78,689	13,115	65,574
Other social monitoring ***	4,098	65,574	10,929	54,645
Total monitoring costs	**48,443**	**775,082**	**247,650**	**527,432**

*include ESIA for 600km road and environmental screening 1800km farm tracks
** include monitoring of land and soil degradation (including soil, water, land and agrochemicals), forest and wetland, flooding, erosion and mudslide, and biodiversity survey
*** includes monitoring of conflict, land access, social exclusion, gender, elite capture, and health & safety issues

As shown on Table 9.2 a total of **USD 775,082.00** has been estimate for the environmental and social monitoring for the AVPD. This represents about **1.2%** of the total estimate project cost. The detailed overview of the monitoring costs is shown on Annex 6. A total of **USD247, 650** is expected to be expended at the base year while the rest is spread across the 2nd to the 6th year (end of the project life cycle). The financing of the monitoring costs is expected to be supported by the Adaptation Fund, and relate especially to: Climate Resilient and Smart Agricultural Production (Component 1) and Climate Resilient Rural Infrastructure (which is under component 2) of the AVDP PDR

10. CAPACITY BUILDING AND TRAINING FOR ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLANS

10.1 Strengthening Capacity and Improving Resilience

A successful mainstreaming of climate change and the ESMF into implementation of the AVDP project requires the strengthening of institutional capacities, in particular those of the Meteorological Agencies, EPA, Farmers Organization, Agricultural Development Program (ADP), and Women Organizations. Moreover, there is a strong need for context-specific, in-situ training sessions for farmers, and others in the value chain, for example on climate-smart agriculture and climate change adaptation, to improve their resilience to deal more effectively with climate-related weather events.

10.2 Training Topics

Proposed training topics include, at the very least:

- Community sensitization;
- Requirements of IFAD's SECAP and ERNM, Gender, as well as Climate, Land and Disclosure policies;
- ESMF processes, procedures and institutional arrangements to develop and implement required management plans;
- Data gathering and use of tools for data analysis;
- Screening and rating as prescribed in the ESMF;
- Environmental, social and climate impact assessment, and requirements;
- Preparation, implementation and monitoring of ESMPs and ESIAs;
- Reporting and monitoring implementation of ESMPs;
- Farmers Field School training on climate smart agriculture, environmental and social best practices, including: Sustainable land preparations, agrochemical application and pest and disease management, sustainable agronomic practices, soil fertility management, low-impact farming methods,
- Conflict resolution and grievance management mechanisms;
- Environmental (EMS 14001) and social audit, and report writing

10.3 Target Audience and Approach

The target groups for training should include, at least:

- Project Steering and Technical Committees; NPCU
- District MAFFS/Project Staff
- Meteorological Agency and ADP staff
- Service providers
- Beneficiaries (i.e. incubators and apprentices)
- Farmers Organizations

The training topics will be delivered based on the needs of each training target group. As much as possible, Training the Trainers (TOT) will be encouraged, where applicable, to manage resources and

effectively reach the target audiences.

Table 10.1: Training Activity and Estimated Cost

SN	Activity	Year						Budget (USD)	Remarks
		1	2	3	4	5	6		
1	General Stakeholders and community sensitization using the media and workshop	X						78,689	Local media+1 day workshop in each of the 16 districts
2	Community sensitization in the districts		X	X				52,459	2day workshop
3	ToT training for regional and state environment /climate specialists, ADP staff and other relevant stakeholders on: (a) Requirements of IFAD's SECAP and ERNM, Climate, Land and Disclosure Policies (b) ESMF processes, procedures and institutional arrangements to develop and implement required management plans; (c) Subproject Screening (d) Environmental, social and climate impact assessment and mitigation; (e) Preparation, implementation, monitoring and reporting of ESMPs and ESIAs	X		X				24,590	5day workshop
4	Soil testing and analysis for production	X	X	X	X	X	X	110,164	
5	Data gathering and analysis for Environmental and Climate M & E	X						7,377	3day workshop
6	Farmers Field School training on climate smart agriculture, environmental and social best practices, including: Sustainable land preparations, agrochemical application and pest and disease management, sustainable agronomic practices, soil fertility management, low-impact farming methods	X	X	X	X	X	X	110,164	
7	Conflict resolution and grievance management	X						5,246	
8	Environmental (EMS 14001) and social audit and report writing	X						10,000	5day workshop
								398,689	

The total training cost is estimated at **USD 398,689** which represents about 0.62% of the project cost. In total, both the Environmental and Social Monitoring costs and Training cost accounts for **1.82%** of the estimated project cost.

Annex 1: Screening for eligibility

AGRICULTURE VALUE CHAIN DEVELOPMENT PROJECT

Letter of Interest (Eligibility Screening Form) Please complete all the required spaces in this form

1. Name: Surname ----------Other Names:----------

Maiden name (for married women):----------

2. Sex: (a) Male { } (b) Female { }

3. Date of birth: ----------

4. Highest Education Level: (a) No formal education { } (b) Primary School { } (c) Secondary School { } (d) Vocational school (e) Tertiary Education { }

5. Which community do you belong to: ----------

6. How long have you lived in this community: ----------

7. How do you belong to this community: (a) by birth { } (b) by marriage { } (c) other (specify):--

---

8. Chiefdom ---------- District ----------

9. What enterprise are you interested in ----------

10. Do you have any experience in this enterprise: (a) Yes { } (b) No { }. If yes, how many years:

---

11. Do you belong to any youth or women organization: (a) Yes { } (b) No { }. If yes, what is the name: ---

---

12. Do you belong to any cooperative society: (a) Yes { } (b) No { }. If yes, what is the name: -------

---

13. Do you have access to any land for the enterprise: (a) Yes { } (b) No { }

14. If yes to question 13, where is the land located----------; and what is the area size of the land? ----------

15. What kind of title to you have to the land: (a) Government paper { } (b) Inheritance from parent {} (c) husband or wife's consent { } (d) family allocation { } (e) community's allocation { } (f)

Others (specify):----------

Endorsements:

Applicant: I certify that the information provided here is correct

Name: ----------

Signature: ----------

Date: ----------

Community/traditional leader:
Name: ---------- Sign: -----
---------- Date: ----------

Verifications:

Comments by the Local Government Liaison Office:----------

Name of Officer: ---------- Designation: ----------

Sign and date: ----------

Comments by the District Project Coordination Office:----------
---

Name of Officer: ----------

Designation: ----------

Sign and date: ----------

Annex 2: Screening for Agric Enterprises

A: Screening Form for Agri-Enterprise Projects

General Information

Project Name:	
Name of applicant:	
Name of Cooperative: Contact person's details:	
Name of Group: Contact person's details:	
Project Location:	
Project sector (e.g. rice farming, Oil Palm processing, etc.)	
Estimated Cost:	
Proposed Date of Commencement:	
Expected Project duration:	
Site (estimated area in ha):	
Any equity/contribution brought into the project:	
Any plan for new construction:	

B: Screening for Environmental and Social Issues for Sub-projects

Question	Yes	No	Additional explanation of
1. Will the sub-project develop any wetlands?			
2. Would the sub-project result in economic displacement[92] (loss of			
3. Would the sub-project result in conversion and/or loss of Physical Cultural Resources?			
4. Will the sub-project have significant social adverse impacts (affecting access to and/use rights to land, access to potable water and water for other uses) on local communities or other project-affected parties?			
5. Will the project trigger unsustainable natural resource management practices (fisheries, forestry, livestock, and significant increase in use of agrochemicals) that exceed the carrying capacity?			
6. Does the sub-project include conversion of significant areas (above 50 ha) of natural forests/other wild lands?			
7. Would the project potentially cause significant adverse impacts to habitats and/or ecosystems and their services (e.g. habitat loss, erosion/ other form of land degradation, fragmentation, hydrological changes)?			
8. Does the proposed project target area include ecologically sensitive areas[93] of global significance for biodiversity conservation and/or biodiversity-rich area; habitats depended on by endangered species?			
9. Does the project involve fisheries development in situations where little information exists on sustainable yield?			
10. Could the project pose a risk of introducing invasive alien species?			
11. Does the project involve the transfer, handling or use of genetically modified organisms/living modified organisms that may have an adverse effect on threatened biodiversity?			
12. Does the project involve land use changes (agricultural intensification and/or expansion of the cropping area) and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods?			
13. Will the project result in increased use of agrochemicals which may affect the natural environment/human health?			
14. Does the project include small-scale irrigation and drainage projects, and water impoundment including small dams (except in wetlands)?			

[92] Economic displacement implies the loss of land, assets, access to assets, income sources or means of livelihoods (see SECAP Procedure Guidance Statement 13)

[93] Sensitive areas' include: protected areas (national parks, wildlife/nature reserves, biosphere reserves); areas of global significance for biodiversity conservation; habitats depended on by endangered species; natural forests; wetlands; coastal ecosystems, including coral reefs and mangrove swamps; small island ecosystems; areas most vulnerable to climate change and variability; lands highly susceptible to landslides, erosion and other forms of land degradation and areas that include physical cultural resources (of historical, religious, archaeological or other cultural significance) and areas with high social vulnerability due to poverty, disease, ethnicity and race

15. Does the project involve agricultural intensification and/or expansion of cropping area in non-sensitive areas?			
16. Do the project activities include rangeland and livestock development?			
17. Does the project involve artisanal fisheries where there is information on sustainable yield?			
18. Do the project activities include aquaculture and/or			
19. Do the project activities include watershed management or rehabilitation?			
20. Does the project include large-scale soil and water conservation measures?			
21. Does the project include small and micro enterprise development sub-projects?			
22. Does the project involve credit operations through financial service providers, including credit for pesticide/other agrochemicals, livestock purchasing,			
23. Do the project activities include natural resources-based value chain development?			
24. Would any of the project activities have minor adverse impacts on physical cultural resources?			
25. Would the project have low probability to have physical resettlement or economic displacement?			
26. Does the project include development of agro-processing facilities?			
27. Will the project require a migrant workforce during construction?			
28. Will the project require seasonal workers to plant and/or harvest produce			
29. Will the construction or operation of the project cause an increase in traffic on rural roads?			

Guidance for sub-project categorization:

"Yes" response to any of questions 1-11	Sub-project Environmental and social	ESIA is required for subproject
"Yes" response to questions 12-29	Sub-project Environmental and social	Sub-project to adopt the ESMP in the general ESMF
"No" response to almost all questions	Subproject Environmental and social	No further analysis is required

Annex 3: Screening for Market Infrastructure

A: General Information for (Market) Infrastructure Sub-Projects

Name of market infrastructure:	
Infrastructure type:	
Location:	
Proposed Date of Commencement:	
Expected Project duration:	
Estimated cost:	
Estimate number of communities to be served:	
Estimated number of entrepreneur to be served:	

B: Screening for (Market) Infrastructure Sub-projects

Question	Yes	No
1. Will the project activities include construction/rehabilitation of rural roads or other rural infrastructure in protected/sensitive areas?[94]		
2. Does the project include construction of roads or other infrastructure that entail the total area being cleared of 50 ha or above?		
3. Does the project include construction of dam (s)/reservoir (between 5-15 m high with a reservoir exceeding 2 million m^3)?		
4. Does the project involve large-scale irrigation schemes rehabilitation/ development (above 100 ha)?		
5. Does the project involve significant extraction of ground water (significantly above recharge capacity)?		

[94] Sensitive areas' include: protected areas (national parks, wildlife/nature reserves, biosphere reserves); areas of global significance for biodiversity conservation; habitats depended on by endangered species; natural forests; wetlands; coastal ecosystems, including coral reefs and mangrove swamps; small island ecosystems; areas most vulnerable to climate change and variability; lands highly susceptible to landslides, erosion and other forms of land degradation and areas that include physical cultural resources (of historical, religious, archaeological or other cultural significance) and areas with high social vulnerability due to poverty, disease, ethnicity and race.

6. Does the project include water-based (ground or surface) development where it is believed that significant depletion due to climate change or overutilization has occurred?		
7. Does the project involve significant extraction, diversion or containment of surface water?		
8. Does the project include drainage or correction of natural water bodies (e.g. river draining)?		
9. Will the project include construction/rehabilitation of rural roads that pass through wetlands?		
10. Would any of the project activities have minor adverse impacts on physical cultural resources?		
11. Does the project include development of agro-processing facilities?		
12. Will the project require a migrant workforce during construction?		
13. Will the construction or operation of the project cause an increase in traffic on rural roads?		
14. Has the government or community guaranteed the lease of the land for the (market) infrastructure?		
15. Is there any plan in place for sustainability of the infrastructure during the project life time?		
16. Does the project include specific measures to protect against dust (such as dust masks and water spraying)?		
17. Has arrangement been made to pay adequate compensation for private property that may be affected by the construction of the project?		

18. Will construction equipment with moderate decibels be used and the timing of use be so that people will experience less discomfort?		
19. Will tree and vegetation replanting be carried out to stabilize slopes and re-green road sides?		

Guidance for categorization:

"Yes" response to any of questions 1-9	Environmental and social category is A	ESIA is required
"Yes" response to questions 10-13	Environmental and social category is B	Sub-project to adopt the general ESMP in the ESMF
"No" response to almost all questions 1-13 and 'Yes' to questions 14-19	Environmental and social category is C	No further analysis is required

Annex 4: Climate Screening Form

Climate Screening Form for Sub-Projects

To be used with the environmental and social screening forms.

Screening for Climate Issues

Question	Yes	No	Additional Explanation of 'Yes' response*
1. Is the project area subject to extreme climatic events such as flooding, drought, tropical storms, or			
2. Do climate scenarios for the project area foresee changes in temperature, rainfall or extreme weather that will adversely affect the project impact, sustainability or cost over its lifetime?			
3. Will the project make investments in low-lying coastal areas/ zones exposed to river flooding and coastal storm surge?			
4. Will the project promote agricultural activity in marginal and/or highly degraded areas that have increased sensitivity to climatic events (such as on hillsides, deforested slopes or floodplains)?			
5. Is the project located in areas where rural development projects have experienced significant weather- related losses and damages in the past?			

6. Will the project develop/ install infrastructure in areas with a track record of extreme weather events?			
7. Is the project target group entirely dependent on natural resources (such as seasonal crops, rain-fed agricultural plots, migratory fish stocks) that have been affected by in the last decade by climate trends or specific climatic events?			
8. Will climate variability likely affect agricultural productivity (crops/ livestock/fisheries) or the associated incidence of pests and diseases for the project target groups?			
9. Would weather-related risks or climatic extremes likely adversely impact upon key stages of identified value chains in the project (from production to			
10. Is the project investing in climate-sensitive livelihoods that are diversified?			
11. Is the project investing in infrastructure that is exposed to infrequent extreme weather events?			
12. Is the project investing in institutional development and capacity building for rural institutions (such as farmer groups, cooperatives) in			
13. Does the project have the potential to become more resilient through the adoption of green technologies at a reasonable cost?			
14. Does the project intervention have opportunities to strengthen indigenous climate risk management capabilities?			
15. Does the project have opportunities to integrate climate resilience aspects through policy dialogue to improve agricultural sector			
16. Does the project have potential to integrate climate resilience measures without extensive additional costs (e.g. improved crop variety, capacity building; or including climate risk issues in policy			
17. Based on the information available would the project benefit from a more thorough climate risk and vulnerability analysis to identify additional complementary investment actions to manage climate risks?			

Guidance for categorization:

"Yes" response to any of questions 1-9	Sub-project Climate risk is High	Climate risk Analysis is required for sub-project
"No" response to almost all questions	Sub-project climate risk is moderate	Sub-project to adopt the ESMP in the general ESMF

Annex 5 - Environmental and Social Guidelines for contractors[95]

(for reference in contractor agreements/contracts)

Sound environmental and social management of construction projects can be achieved only with adequate site selection and project design. As such, the ESMP for projects involving any new construction, or any rehabilitation or reconstruction for existing projects, should provide information as to screening criteria for site selection and design including the following:

Site Selection

Sites should be chosen based on community needs for additional projects, with specific lots chosen based on geographic and topographic characteristics. The site selection process involves site visits and studies to analyse: (i) the site's, sub-urban, or rural characteristics; (ii) national, regional, or municipal regulations affecting the proposed sites; (iii) accessibility and distance from inhabited areas; (iv) land ownership, including verification of absence of squatters and/or other potential legal problems with land acquisition; (v) determination of site vulnerability to natural hazards, (i.e. intensity and frequency of floods, landslides, etc.); (vi) suitability of soils and sub-soils for construction; (vii) site contamination; (viii) flora and fauna characteristics; (ix) presence or absence of natural habitats and/or ecologically important habitats on site or in vicinity (e.g. forests, wetlands, rare or endangered species); and (ix) historic and community characteristics.

The rules (including specific prohibitions and construction management measures) should be incorporated into all relevant bidding documents, contracts, and work orders.

Prohibitions

The following activities are prohibited on or near the project site:

- Cutting of trees for any reason outside the approved construction area;
- Hunting, fishing, wildlife capture, or plant collection;
- Use of unapproved toxic materials, including lead-based paints, asbestos, etc.
- Disturbance to anything with architectural or historical value;
- Building of fires;
- Use of firearms (except by authorized security guards);
- Use of alcohol by workers.

Construction Management Measures

Solid, sanitation, and hazardous wastes must be properly controlled, through the implementation of the following measures:

Waste Management:

- Minimize the production of waste that must be treated or eliminated;
- Identify and classify the type of waste generated. If hazardous wastes (including health care wastes) are generated, proper procedures must be taken regarding their storage, collection, transportation and disposal;
- Identify and demarcate disposal areas clearly indicating the specific materials that can be deposited in each;
- Control placement of all construction waste (including earth cuts) to approved disposal sites (>300 m from rivers, streams, lakes, or wetlands). All garbage, metals, used oils, and excess material generated during construction should only be dispose in authorized areas, incorporating recycling systems and the separation of materials.

Maintenance:

[95] Adapted from Ministry of Agriculture, Irrigation and Water Development, Republic of Malawi (2015) *Environmental and Social Management Framework for Programme for Rural Irrigation Development in Malawi*, pp.76-80.

- Identify and demarcate equipment maintenance areas (>15m from rivers, streams, lakes or wetlands);
- Ensure that all equipment maintenance activities, including oil changes, are conducted within demarcated maintenance areas; never dispose spent oils on the ground, in water courses, drainage canals or in sewer systems;

Identify, demarcate and enforce the use of within-site access routes to limit impact on site vegetation;
- Install and maintain an adequate drainage system to prevent erosion on the site during and after construction.

Erosion Control
- Erect erosion control barriers around perimeter of cuts, disposal pits, and roadways;
- Spray water on dirt roads, cuts, fill material and stockpiled soil to reduce wind-induced erosion, as needed;
- Maintain vehicle speeds at or below 10mph within the work area, 15mph or below within 200m of the site, and abide by the relevant speed limits at all times to / from the work area.

Stockpiles and Borrow Pits
- Identify and demarcate locations for stockpiles and borrow pits, ensuring that they are 15 meters away from critical areas such as steep slopes, erosion-prone soils, and areas that drain directly into sensitive water bodies;
- Limit extraction of material to approved and demarcated borrow pits.

Site Clean-up
- Establish and enforce daily site clean-up procedures, including maintenance of adequate disposal facilities for construction debris.

Safety during Construction

The Contractor's responsibilities include the protection of every person and nearby property from construction accidents. The Contractor shall be responsible for complying with all national and local safety requirements and any other measures necessary to avoid accidents, including the following:
- carefully and clearly mark pedestrian-safe access routes;
- If school children are in the vicinity, include traffic safety personnel to direct traffic;
- Maintain supply of supplies for traffic signs (including paint, easel, sign material, etc.), road marking, and guard rails to maintain pedestrian safety during construction;
- Conduct safety training for construction workers prior to beginning work;
- Provide personal protective equipment (PPE) and clothing (such as goggles, gloves, respirators, dust masks, hard hats, steel-toed and –shanked boots, etc.,) for construction workers and enforce their use;
- Post Material Safety Data Sheets for each chemical present on the worksite;
- Require that all workers read, or have read, all Material Safety Data Sheets. Clearly explain the risks to them and their partners, especially when pregnant or planning to start a family. Encourage workers to share the information with their physicians, when relevant;
- Ensure that the removal of asbestos-containing materials or other toxic substances be performed and disposed of by specially trained workers;
- During heavy rains or emergencies of any kind, apply construction safeguards guidelines;
- Brace electrical and mechanical equipment to withstand unexpected events during construction.

Nuisance and Dust Control

To control nuisance and dust the Contractor should:
- Maintain all construction-related traffic at or below 15 mph on streets within 200 m of the site;
- Maintain all on-site vehicle speeds at or below 10 mph;
- To the extent possible, maintain noise levels associated with all machinery and equipment at or

below 90db;

- In sensitive areas (including residential neighbourhoods, health centres, schools, etc.) more strict measures may need to be implemented to prevent undesirable noise levels;
- Minimize production of dust and particulate materials at all times, to avoid impacts on surrounding families and businesses, and especially to vulnerable people (children, elderly);
- Phase removal of vegetation to prevent large areas from becoming exposed to wind;
- Place dust screens around construction areas, paying particular attention to areas close to housing, commercial areas, and recreational areas;
- Spray water as needed on dirt roads, cut areas and soil stockpiles or fill material;
- Apply proper measures to minimize disruptions from vibration or noise coming from construction activities. **Community Relations**

To maintain cordial community relations the Contractor should:

- Following the country and ESMP requirements, inform the population about construction and work schedules, interruption of services, traffic detour routes, as appropriate;
- Limit construction activities at night. When necessary ensure that night work is carefully scheduled and the community is properly informed so they can take necessary measures;
- At least five days in advance of any service interruption (including water, electricity) the community must be advised through clearly visible posters at the project site and at central community locations;
- Where possible, particularly for tasks that can also be performed through low-skilled manual labour (such as digging of shallow trenches, etc.), make use of labour from the local community.

Chance Find Procedures for Culturally Significant Artefacts

In case culturally valuable materials (incl. shrines, graves, etc.) are uncovered during excavation:

- Stop work immediately following the discovery of any materials with possible archaeological, historical, paleontological, or other cultural value, announce findings to project manager and notify relevant authorities;
- Protect artefacts as well as possible using plastic covers, and implement measures to stabilize the area, if necessary, to properly protect artefacts;
- Prevent and penalize any unauthorized access to the artefacts;
- Restart construction works only upon the authorization of the relevant authorities.

Environmental Supervision during Construction

The bidding documents should indicate how compliance with environmental rules and design specifications would be supervised, along with the penalties for non-compliance by contractors or workers. Construction supervision requires oversight of compliance with the manual and environmental specifications by the contractor or his designated environmental supervisor. Contractors are also required to comply with national and state regulations governing the environment, public health and safety.

Annex 6: Detailed Costing of Environmental and Social Monitoring costs

Sn	Monitoring activities	Qty /frequency	costing index	No of districts	Cost (unit) in USD		Total for 16 districts (USD)		Year 1	Year 2 - 7
1	Site specific ESIAs for road construction	600km roads	600		49,180		49,180		24,590	24,590
2	Site specific ESIAs for earthen dam	40 earthen dams	40		32,787		32,787		16,393	16,393
3	Site specific Environmental Screening for farm track construction/improvement	1800 farm tracks	1800		29,508		29,508		14,754	14,754
4	Environmental baseline study	1 time	1	16	1,639		26,230		26,230	0
5	Land, soil and water degradation assessment (including waste and agrochemicals in land, soil and water) - two yearly	3times	3	16	4,918		78,689		11,241	67,447
6	Forest and (mangrove) wetland deforestation assessment -two yearly	3 times	3	16	4,918		78,689		26,230	52,459
7	Erosion/mudslide and flooding - two yearly	3 times	3	16	4,918		78,689		26,230	52,459
8	Biodiversity survey - annually	6 times	6	16	9,836		157,377		22,482	134,895
9	Survey of access to climate information and agro-decision makings and GHG emissions study -	3times	3	16	2,951		47,213		6,745	40,468
10	Social / livelihood (SLA) baseline study	1 time	1	16	3,279		52,459		52,459	0
11	Livelihood monitoring (annual)	6 times	6	16	4,918		78,689		0	78,689
12	Other social monitoring**	6times	5	16	4,098		65,574		9,368	56,206
	TOTAL				**152,951**		**775,082**		**236,721**	**538,361**

Annex 7: List of Stakeholders Consulted

Meetings: 19/6/2018

Ministry of Lands, Country Planning and the Environment

- Mr Israel Jigbo – Permanent Secretary
- Mr Keita

Sierra Leone Environmental Protection Agency (EPA)

- Mr Bah – Director EPA

Forestry Department

- Mr Sahr J Kellie – Deputy Director, Forestry

Ministry of Works

- Mr Joseph Tikanu – Permanent Secretary

Sierra Leone Meteorological Agency

- Mr Ibrahim S Kamara – Director
- Mr Gabriel Kpaka – Deputy Director
- Mr Patrick Miesa – Head of Climatology
- Mr Saiku Yayah Bah - Accountant