Meeting of the Board
13 – 16 March 2023
Songdo, Incheon, Republic of Korea
Provisional agenda item 11

GCF/B.35/02/Add.01/Rev.01

13 March 2023

Consideration of funding proposals - Addendum I

Funding proposal package for FP199

Summary

This addendum contains the following seven parts:

a) A funding proposal titled "Public-Social-Private Partnerships for Ecologically-Sound Agriculture and Resilient Livelihood in Northern Tonle Sap Basin (PEARL)";
b) No-objection letter issued by the national designated authority(ies) or focal point(s);
c) Environmental and social report(s) disclosure;
d) Secretariat's assessment;
e) Independent Technical Advisory Panel's assessment;
f) Response from the accredited entity to the independent Technical Advisory Panel's assessment; and
g) Gender documentation.

It is noted that some modifications have been made in gender documentation to reflect the revised language.

Table of Contents

Funding Proposal

Project/Programme title:	Public-Social-Private Partnerships for Ecologically-Sound Agriculture and Resilient Livelihood in Northern Tonle Sap Basin (PEARL)
Country(ies):	Cambodia
Accredited Entity:	Food and Agriculture Organization of the United Nations
Date of first submission:	*[2022/04/11]*
Date of current submission	*[2022/08/07]*
Version number	*[V.08]*

GREEN CLIMATE FUND

Contents

Note to Accredited Entities on the use of the funding proposal template

- Accredited Entities should provide summary information in the proposal with cross-reference to annexes such as feasibility studies, gender action plan, term sheet, etc.
- Accredited Entities should ensure that annexes provided are consistent with the details provided in the funding proposal. Updates to the funding proposal and/or annexes must be reflected in all relevant documents.
- The total number of pages for the funding proposal (excluding annexes) **should not exceed 60**. Proposals exceeding the prescribed length will not be assessed within the usual service standard time.
- The recommended font is Arial, size 11.
- Under the GCF Information Disclosure Policy, project and programme funding proposals will be disclosed on the GCF website, simultaneous with the submission to the Board, subject to the redaction of any information that may not be disclosed pursuant to the IDP. Accredited Entities are asked to fill out information on disclosure in section G.4.

Please submit the completed proposal to:

fundingproposal@gcfund.org

Please use the following name convention for the file name:

"FP-[Accredited Entity Short Name]-[Country/Region]-[YYYY/MM/DD]"

A. PROJECT/PROGRAMME SUMMARY

A.1. Project or programme	Project	**A.2. Public or private sector**	Public
A.3. Request for Proposals (RFP)	Not applicable		

A.4. Result area(s)		**GCF contribution**	**Co-financers' contribution**[1]
	Adaptation total	100 %	100 %
	☒ Most vulnerable people and communities	50 %	48 %
	☒ Health and well-being, and food and water security	34 %	35 %
	☒ Ecosystems and ecosystem services	16 %	17 %

A.5. Expected mitigation outcome *(Core indicator 1: GHG emissions reduced, avoided or removed / sequestered)*	Project has no expected mitigation outcome. Mitigation impact is considered a co-benefit (see B 2 (b)).	**A.6. Expected adaptation outcome** *(Core indicator 2: direct and indirect beneficiaries reached)*	Direct: • 450,000 farmers with improved access to tailored agrometeorological advisory services, including, smallholder farmers and other local value chain actors with improved financial and technological access. Indirect: • 1 million farmers and other value chain actors (See Section D.1)	
			Direct: ca.3% of Cambodia's population (50% female beneficiaries)	Indirect: ca.6% of Cambodia's population (50% female beneficiaries)

A.7. Total financing (GCF + co-finance[2]**)**	42,850,231 USD	**A.9. Project size**	Small (Upto USD 50 million)
A.8. Total GCF funding requested	36,231,981 USD		
A.10. Financial instrument(s) requested for the GCF funding	☒ Grant 36,231,981		
A.11. Implementation period	6 years	**A.12. Total lifespan**	20 years
A.13. Expected date of AE internal approval	*5/4/2022*	**A.14. ESS category**	B
A.15. Has this FP been submitted as a CN before?	Yes ☒ No ☐	**A.16. Has Readiness or PPF support been used to prepare this FP?**	Yes ☒ No ☐
A.17. Is this FP included in the entity work programme?	Yes ☐ No ☐	**A.18. Is this FP included in the country programme?**	Yes ☒ No ☐

[1] Co-financer's contribution means the financial resources required, whether Public Finance or Private Finance, in addition to the GCF contribution (i.e. GCF financial resources requested by the Accredited Entity) to implement the project or programme described in the funding proposal.

[2] Refer to the Policy of Co-financing of the GCF.

A.19. Complementarity and coherence

Yes ☒ No ☐

Table 3 under Section B.1 elaborates the complementarity between the proposed project and the following three parallel investments/activities.

Parallel investment/activity	Area of Complementarity
• FAO-led project, "Promoting Climate-Resilient Livelihoods in Rice-Based Communities in the Tonle Sap Region," with funding from the Least Developed Countries Fund (LDCF) under the Global Environment Facility (GEF)	• Scaling up the impact at the landscape level with the GEF
• ADB-led GCF project, "Climate-Friendly Agribusiness Value Chains Sector (CAVS)."	• Replicating the experience and lessons of another GCF project and scaling up the impact at systemic and institutional levels.
• IFAD-led project, "Sustainable Assets for Agriculture Markets Business and Trade (SAAMBAT)."	• Building on the parallel investment for complementary investment results.

A.20. Executing Entity information

- Food and Agriculture Organization of the United Nations (FAO)
- Royal Government of Cambodia (RGC), acting through the Ministry of Agriculture, Forestry and Fisheries (MAFF), and the Ministry of Environment (MoE) (NDA). (Note: HACT Micro Assessment Reports on MAFF and MoE are finalized)

A.21. Executive summary (max. 750 words, approximately 1.5 pages)

The proposed project, "Public-Social-Private Partnerships for Ecologically-Sound Agriculture and Resilient Livelihood in Northern Tonle Sap Basin (PEARL)," aims to enhance the climate change resilience of smallholder farmers and local communities in the NTSB by increasing their access to growing premium market segments while using their improved market access to incentivize their transition to climate-resilient practices, mainly through effective public-social-private partnerships.

The Northern Tonle Sap Basin (NTSB) is one of Cambodia's most important agricultural regions. A fifth of the country's cereal and grain production comes from this region. The NTSB has some of the highest poverty rates in the country and experienced severe environmental degradation. The anticipated impacts of climate change will compound these socioecological vulnerabilities. Changing precipitation patterns and extreme weather events have already been observed. They are expected to significantly impact traditional rice production, relying on rainfed systems, with limited irrigation potential due to the region's generally hilly topography. At the same time, there are growing market opportunities for the NTSB in higher-value and niche product segments with mango, cashew, organic rice, and leafy vegetables, which have been identified as the country's priority crops for further development and expansion by the Ministry of Agriculture, Forestry, and Fisheries (MAFF) (2019). However, these segments are currently inaccessible to most smallholder farmers and local value-chain actors due to several limitations, including a lack of access to finance, technologies, and market knowledge. These segments must also adapt to the impacts of climate change to develop. With the promotion of climate-resilient practices and technologies, capacity development, and enabling conditions, these segments should offer significant potential to increase the adaptive capacity of smallholder farmers and local value-chain actors, who would otherwise experience downward trends in agricultural productivity and livelihood.

These challenges have also been highlighted by a recent assessment of COVID-19 impact on the agriculture sector (MAFF, CARD and FAO, 2020). The assessment also identifies several opportunities, including the increased use of the internet of things (IoT) for capacity development and improving market access. Increased demand for domestic horticultural production in lieu of reduced import capacity in light of the pandemic also suggests a significant opportunity for vegetable farmers in the NTSB. The projected impact of climate change and recent experience with the global pandemic thus cast light on the needs and opportunities for smallholder farmers and other local value chain actors in the NTSB, where production capacity is limited by its unique geography and topography, to adopt climate-resilient, high-value and inclusive agriculture to reduce their vulnerability.

The PEARL project will deliver the following three interdependent outcomes to address these challenges.

1. Farmers' capacities are enhanced to manage climate impacts and related risks;
2. Adaptive capacity of smallholder farmers and other local value chain actors, particularly vulnerable women farmers, is increased through market incentives that promote climate-resilient, higher-value, diversified, and sustainable production and processing, and
3. Regulatory and institutional frameworks and capacities for climate-resilient agricultural certification, cross-sectoral coordination for increased PSPPs and smallholder financing, and climate-informed investment support are strengthened.

These outcomes will achieve the project's goal that: IF the project increases the capacity of smallholder farmers and other local value chain actors and institutional support mechanisms in the NTSB to generate and apply crop-specific agrometeorological information to reduce climate risks and impacts, and adopt market-informed climate-resilient and sustainable production and processing practices and technologies through improved PSPPs, THEN Cambodia will be able to place this climate-vulnerable and agriculture-dependent region on a sustainable development pathway through strategic alignment between climate foresight, market incentives and enabling environment, BECAUSE the smallholder farmers and other local value chain actors will have developed the necessary means and capacity to take advantage of relevant market opportunities and instruments to reduce and cope with climate impacts and continue improving their agricultural production and livelihoods sustainably.

The project will leverage increased private and public investments for building the climate change resilience of smallholder farmers and local value-chain actors in the NTSB and benefit approximately 450,000 farmers and other local value chain actors (ca. 3% of Cambodia's population).

B. PROJECT/PROGRAMME INFORMATION

B.1. Climate context (max. 1000 words, approximately 2 pages)

I. Background

1 The proposed GCF project, "Public-Social-Private Partnerships for Ecologically-Sound Agriculture and Resilient Livelihood in Northern Tonle Sap Basin (PEARL)," aims to enhance climate change resilience of smallholder farmers and local communities in the Northern Tonle Sap Basin (NTSB) by promoting climate-resilient, higher-value, inclusive and sustainable agriculture through a value-chain approach built on effective public-social-private partnerships (PSPPs).

2 Cambodia remains one of the few Least Developed Countries (LDCs) in Asia (UNDESA, 2018). The country has nonetheless made steady economic development progress. In 2018, Cambodia's gross national income (GNI) per capita reached US$ 1,380, which had more than tripled since 2004 (WB, 2019). Much of this growth was due to favorable macroeconomic policies and developments (i.e., increased lending, investments, and exports) in the agriculture sector, which accounts for nearly a third of the country's GDP (CIB & CSEZB, no date; WB, 2015; Cramb, Sareth and Vuthy, 2020). Among the main crops produced in Cambodia, rice is the staple and single most important crop in the country, providing nearly 70% of nutritional needs and accounts for nearly 80% of Cambodia's crop production, followed by cassava, maize, soybean, mung bean and other crops (MoE, 2015; MAFF, 2017). The agricultural expansion, supporting the country’s economic growth in the past decades, has also come at the cost of environmental degradation, mainly through deforestation to make way for crop production.

3 Despite the overall growth and expansion of the agriculture sector, smallholder farmers in rural areas have notably lagged behind this progress due to their limited capacity and access to finance, technologies and information. Roughly 45% of the country's labor force is directly engaged in agriculture, and over 60% of which is found in rural areas where poverty rates are often higher than 20%, compared to 10% in Phnom Penh (RGC, 2014, 2018b). While Cambodia's rural agrarian population plays an essential role in the country's economy, persistent poverty makes many farming communities and households vulnerable to extreme weather events and natural disasters. The environmental degradation resulting from rapid agricultural expansion has also exacerbated the effects of these extreme weather events and contributed to increased natural disasters.

4 The vulnerability of farmers and farming households to the increased climate variability poses a significant threat to the country’s sustainable development as it affects not only the country’s main economic engine but also its food security and social cohesion. The COVID-19 pandemic, which has disrupted agricultural supply chains and demand due to the restrictions on the movement of people and goods, has also elucidated the critical linkages between the market and underlying socioeconomic vulnerabilities of Cambodian farmers, particularly the poor, women and other socially excluded minorities (MAFF, CARD and FAO, 2020). This pandemic has also underscored the need to address these vulnerabilities of farmers and farming households by building more resilient and sustainable relationships between farmers and agricultural markets to cope with both economic and natural shocks.

II. Agriculture in NTSB and Underlying Vulnerabilities

5 NTSB is defined as the areas north of the Tonle Sap Lake, including Oddar Meanchey, Kampong Thom, Preah Vihear, and Siem Reap provinces. The region is home to approximately 20% of the country’s population. It encompasses a total land area of 2.5 million hectares (ha) with evergreen and deciduous forests, covering hilly areas

in the north, vast swaths of cropland in the middle (mainly for rice production) and flooded forests and grassland areas along the Tonle Sap Lake in the south (see Annex 16 -maps). The average annual rainfall in the region varies from 1,000 to 1,500 mm. There are ten main soil types and five main watersheds, including Stung Sen and Stung Staung, vital sources of water for rice production and livelihoods in the region (Oeurng et al., 2019). Over 20% of the country's aromatic rice production, among others such as cassava (35%) and sugarcane (27%), comes from this region (NIS, 2019). The region has also been identified as one of the most vulnerable regions in the country to floods and droughts, which are expected to occur more frequently with increased intensity due to climate change (Rai *et al.*, 2015b; ADB, 2016)

6 The production of cashew, mango, aromatic rice, and vegetables has expanded in recent decades in Cambodia as demand for these crops has increased domestically and internationally (ResponsAbility Investments AG, 2015; Duong and Khin, 2016; Bunthoeun, 2019; Vannak, 2019). The NTSB was responsible for 31% and 14% of the country's total harvested volumes, respectively, for cashew and mango in 2018 and 2019 (NIS, 2019). Cashew yields were approximately 20 % higher than the national average in Kampong Thom and Preah Vihear, and similarly, for Oddar Meanchey, its mango yield was 30% above the national average (ibid.). In terms of planted areas, the production of aromatic rice, cashew, mango and vegetables had increased both nationally and in the NTSB between 2013 and 2019 while the production of non-aromatic rice had decreased during the same period. While the production areas for vegetables had decreased nationally, the NTSB had expanded the production areas in the same period.

7 Aromatic rice, cashew, mango and vegetables have emerged as alternative agricultural commodities and value chains in the NTSB with the potential to access premium price markets through meeting quality control and food safety standards such as organic certification, the Cambodian Good Agricultural Practices (CamGAP), Geographical Indication (GI)[3], Sustainable Rice Platform (SRP), Hazard Analysis Critical Control Point (HACCP), and ISO 22000 (Burn et al., 2018; ICEM, 2020). For instance, although the yield for aromatic rice in Preah Vihear was 20% lower than the national average in 2019, agricultural chemical input for aromatic rice production in the province was notably lower than the national average, and compared to the other NTSB provinces. This indicates the province's prevailing trend towards organic rice production (IFC, 2015; SARAN, 2017). In 2018, organic rice (both aromatic and non-aromatic) production accounted for 12% of the province's total rice production (Burn et al., 2018). The price premium for organic rice was up to 30% compared to non-organic rice (ibid.).

8 These segments of agriculture in the NTSB present considerable sustainable expansion and diversification opportunities for smallholder farmers and other local value chain actors(Burn et al., 2018). These crops have also been identified as the country's priority crops for further development by the MAFF (2019). However, most smallholder farmers in the NTSB are unable to take advantage of these opportunities and practice low-value and low-quality agriculture due in part to several structural and capacity challenges. Table 1 provides an overview of such opportunities and challenges associated with these emerging segments of agriculture in the NTSB.

Table 1: Overview of Key Crops in NTSB

Alternative Crop/ Area Grown	Opportunities	Challenges
Cashew/ Kampong Thom and Preah Vihear Mango/ Oddar Meanchey	• Most cashew farmers grow a variety called M23 (to a lesser degree, H09, M10, and M04), which gives a higher yield and market value than traditional varieties. • Most mango farmers grow a variety called Keo Romeat, which is well regarded for its quality. • Premium price markets exist for quality-controlled products. • Growing market trends offer opportunities to access premium price markets by adopting relevant international quality and production standards. • Perennial nature provides agroforestry potential for rural livelihood diversification, increased fuelwood supply, forest conservation, mitigation, and catchment protection.	• Moderate use of pesticides with insufficient control measures. • Most smallholder farmers, agricultural cooperatives (ACs), and farmers associations (FAs) and producer groups (PGs) sell to wholesale buyers with limited value addition opportunities. • Lower profit margins give little incentive for adopting climate-resilient and sustainable practices, including integrated pest management (IPM). • Smallholder farmers, ACs, FAs, PGs and other local value chain actors lack the necessary resources (i.e., knowledge, finance, technologies) to access higher-value markets. • Weak self-governance capacity for mobilizing organized support for value chain access and development. • Lack of postharvest storage and processing capacity.
Organic Rice/ Preah Vihear	• Combination of labor shortages, increased climate variability and market trends have encouraged farmers to adopt the	• Lack of favorable contract farming and direct market access opportunities.

[3] An intellectual property tool, protecting products with a specific geographical origin and possess qualities or a reputation that are due to that origin (https://www.wipo.int/geo_indications/en/).

	production of short-duration aromatic rice (key organic rice segment), shifting from longer duration non-aromatic rice. • Price gain through organic production could offset the anticipated decline in yield for farmers in these remote hilly areas. • Organic rice in Preah Vihear is certified in the US and EU markets, and further value addition opportunity through GI. • Topography keeps paddy fields small and fragmented with natural buffers to maintain rich agroecosystems.	• Limited mechanization. • Limited access to finance and quality supplies and extension services. • Limited capacity of ACs, PGs and FAs to provide structured and strategic support to individual farmers. • Lack of IWM to ensure water quality and availability at the landscape level. • Limited integration of agrometeorological and market advisory services to optimize production.
Leafy Vegetables/ Siem Reap and Preah Vihear	• Several champion vegetable farmers networks[4] with expanding access to local markets (retailers, hotels, and restaurants) in Siem Reap and Phnom Penh. • Growing demand for safe and sustainably produced vegetables offers higher prices. • Horticultural innovations enable climate-resilient production for income generation and household consumption.	• Lack of resources (knowledge, finance, and technologies) to increase product varieties and quality and overcome seasonality. • Lack of market access. • Limited quality control measures (e.g., postharvest storage, handling and transportation). • Lack of organized support through e.g., unions for value chain development.

9 According to the ID Poor (ca. below the poverty line) data collected between 2017 and 2020 (RGC, 2020b), the NTSB was home to 14.5% of the country's ID Poor households. Poverty rates in the NTSB were among the highest in the country during the previous decade. Oddar Meanchey had the second-highest poverty rate (28%), followed by Preah Vihear (25%), which was the 4th highest in the country (RGC, 2014). This has led to noticeable labor migration by men to urban areas and abroad, especially from the remote northern sections of the NTSB. The number of female-headed households in all four provinces had increased between 2013 and 2019 (NIS, 2019). This trend was particularly noticeable in Oddar Meanchey with one of the highest poverty rates, located in the remote northern section, bordering Thailand (RGC, 2014, 2018b). Key drivers of poverty include limited employment and market opportunities for this region's primarily agriculture-dependent population. Factors such as a lack of access to finance, technology, and knowledge prevent smallholder farmers and other small-scale local value chain actors from moving away from low-value and low-quality production, which reinforces these drivers. Such factors are partly due to the country's limited agricultural extension capacity, lack of effective PPPs with solid representation by agricultural unions and associations, and weak regulatory conditions and enforcement capacity to derisk such partnerships. These underlying socioeconomic vulnerabilities in the NTSB are further exacerbated by the severe impacts of climate change, making them the most vulnerable population groups in Cambodia (Rai *et al.*, 2015a).

III. Climate Baseline: Drought, Flooding and Crop Pest and Diseases

Temperature

10 Analysis of observed historical data shows annual mean temperature anomaly has increased by 0.8 degrees Celsius (°C) since 1950 with a rate of 0.023 °C per year (Thoeun, 2015). The rate of change is most rapid in the dry season (December, January and February) and followed by the spring season (March, April and May) and slowest in the wet season (June, July and August).

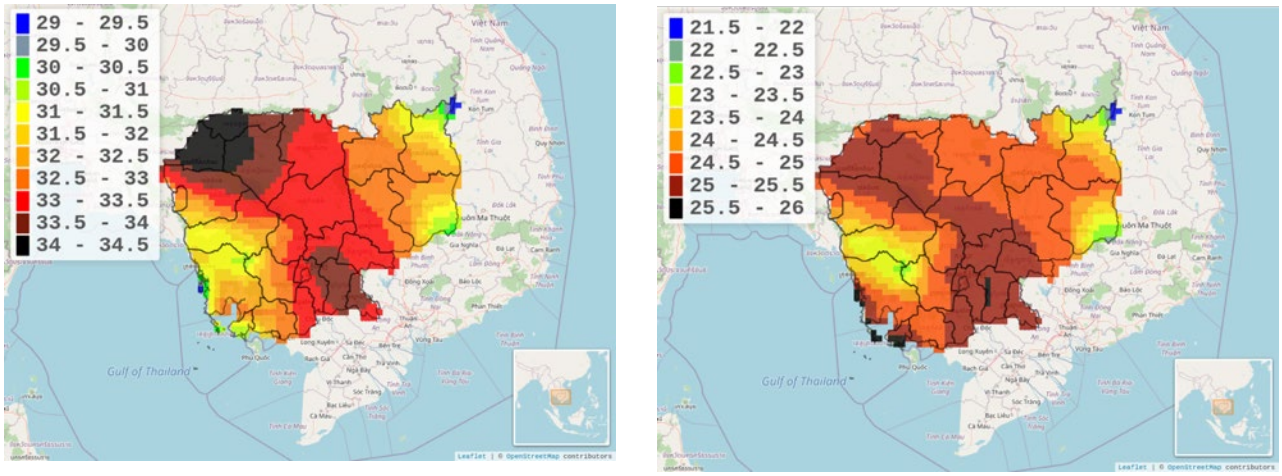
11 FAO's analysis of bias corrected data from the Coordinated Regional Downscaling Experiment (CORDEX), based on CMIP5 global climate projections and RCP scenarios shows notable changes in maximum and minimum temperatures across Cambodia under RCP4.5 and RCP8.5 in the near (2011-2040), medium (2040-2070) and far (2070-2100) future (FAO, 2022). Maximum temperature is expected to increase consistently from the historical baseline (1980-2005) into the future, in particular in the NTSB. Maximum temperature will increase to a larger degree under RCP8.5, up to 3.6 °C by the far future period.

12 Temperature minimum across Cambodia shows similarities in spatial and temporal distribution to temperature maximum, increasing into the future with a larger magnitude for RCP8.5 as compared to RCP4.5. In both minimum and maximum temperatures, the NTSB, particularly its northern sections show the highest increase from the baseline (see figure 1).

13 The number of days with temperature >33 °C also increases into the medium and far future, with larger increases observed under RCP8.5. Geographically, it is observed that the number of days >33 °C is higher in the southwestern and northeastern (i.e., NTSB) regions of the country and will be exacerbated into the future.

[4] Champion farmers, who are mainly women, have extensive experience in farming and mastered the knowledge and skills, and diffused them to other farmers.

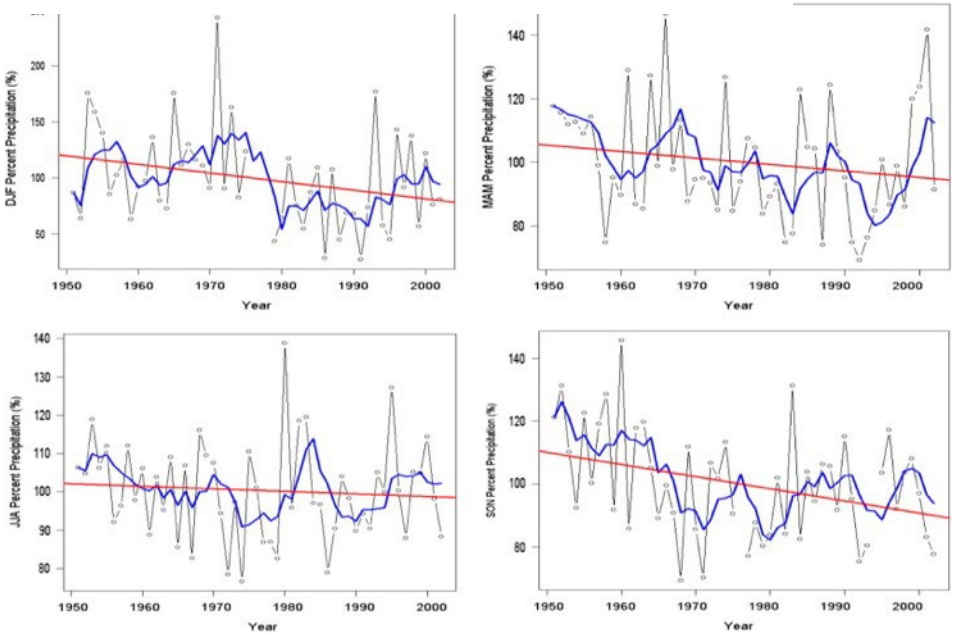
Figure 1: Average temperature maximum (left) and temperature minimum (right) during the rainy season May-October over the period 1987-2016 from the reanalysis dataset W5E5 (FAO analysis).



Precipitation

14 Analysis of historical precipitation observations (Figure 2) highlights significant interannual and intra-seasonal variability in precipitation during all seasonal periods throughout the year. Historical data show general decreasing trends, with large interannual variability in particular in the rainy season (Thoeun, 2015). The trend in decreasing precipitation is largest in September to November with a smaller rate of change during other periods. During the period June-August, the trend over the historical period shows little change over the period 1960-2000.

Figure 2 Historical mean precipitation change over the period 1960-2000 by season December-February (top left), March-May (top right), July through August (bottom left) and September-November (bottom right). Red, indicating regression lines, and blue indicating mean value.

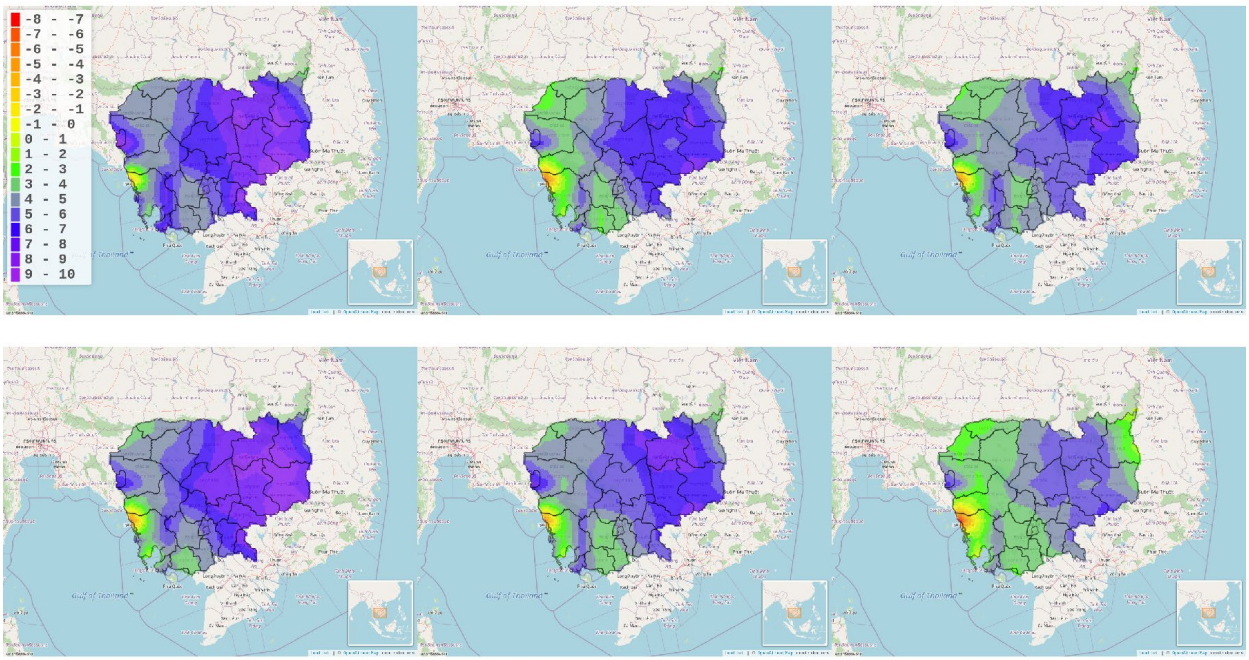


15 The rainy season, which lasts from May to early October, accounts for 90% of annual precipitation in the NTSB. The dry season, from November to April, brings drier and cooler air from November to March, and then hotter air in April and early May. The maximum mean temperature in Cambodia is about 28 °C and the minimum mean temperature is about 22°C.

16 Although projections from the Climate Information Platform[5] based on CORDEX South Asia Ensemble Mean suggest an overall increase in annual mean precipitation in the medium to far future, FAO's downscaled analysis from the same CORDEX data indicates an overall decrease in annual cumulative precipitation into the future. There is an upward trend in rainfall between June and August in the northwest, and a downward trend in the northeast of the country. The projected increases in wet season rainfall will be partially offset by projected decreases in dry season rainfall. Precipitation deviation from the historical average baseline (1980-2005) shows an increase in the near future, with subsequent decreases in annual cumulative precipitation in the medium and far future, with variation geographically.

17 Many agricultural producers rely on rain fed production in the wet season, and FAO's downscaled analysis of the CORDEX data suggests decreasing wet season precipitation into the future, with some pockets of increases in the coastal regions, to a higher degree under RCP8.5 and with changes up to -500 mm/year in the NTSB. At the same time, the number of heavy rainfall events or days with heavy precipitation (>50 mm/day) are expected to increase in the near and medium-term future, up to 9 days, and in the longer term by fewer days (5-6 days) compared to the baseline period (1980-2005). An increase in heavy precipitation days with an overall decrease in cumulative precipitation suggests that rainfall events will be more intense and infrequent, and the rainy season will become shorter (Figure 3).

***Figure 3:** Deviation in number of days with heavy precipitation (50 mm/day) from historical baseline period (1980-2005) under RCP 4.5 (top row) for the period 2011-2040 (left), 2040-2070 (middle) and 2070-2100 (right) and RCP8.5 (bottom row) for the same time periods. The deviation highlights the projected change into the future in days based on projections from bias corrected regional CORDEX data (FAO, 2020).*



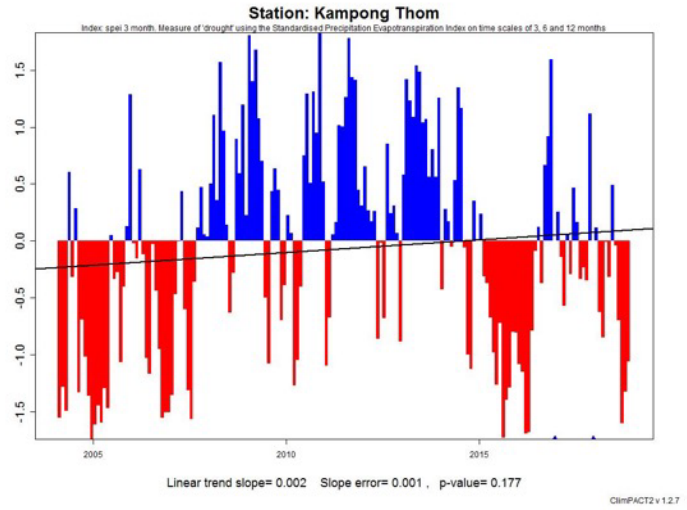
Drought, flooding and crop pest and diseases

18 Drought in Cambodia occurs regularly and is driven by extended dry periods and the level of water resources in the terrestrial water bodies. The frequency of drought varies from province to province with many parts of the NTSB significantly affected according to the drought vulnerability index (Rai *et al.*, 2015a).

[5] https://climateinformation.org

19 For instance, in Kampong Thom, the 3-month standardized precipitation evapotranspiration index (SPEI) in Figure 4 shows an increasing trend over the last 15 years, and very severe droughts continue to occur periodically in recent years. The SPEI takes into account both precipitation and potential evapotranspiration, therefore capturing the impact of increased temperatures on water demand than a simple precipitation index in its estimation of drought. During the 2019 drought, water shortage was reported for most of the provinces cultivating dry season rice.

Figure 4: Three months SPEI for Kampong Thom weather station (computed by ClimPACT2)

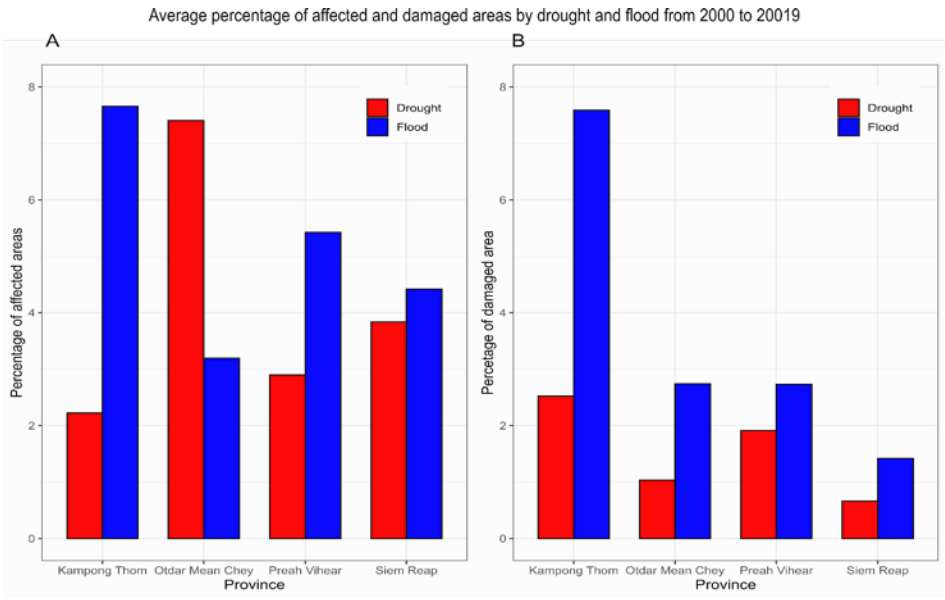


20 The major rice growing areas of the Mekong-Tonle Sap basin are exposed to flooding every year but in recent years have often been exposed to extreme flooding. Generally, floods in Cambodia are not entirely a local climatic problem as the water level is highly affected by the hydrology in the entire Mekong River Basin. Extended periods of flooding in the Mekong River and Tonle Sap Lake have ruined many deep-water rice crops. In La-Nina years, up to one-fifth of the total cultivated area (0.5 million ha) of wet season rice has suffered from flooding. In agriculture areas where temporary flooding occurs, floods result in severe challenges for germination for some direct-seeded rice and most upland crops, including legumes.

21 From 2000 to 2019, on average, 4.1% and 5.2% of the total rice-cultivated land were affected by drought and flood in the four NTSB provinces, corresponding to about 6,000 ha (Figure 5). While Kampong Thom was the most flood-affected province, farmers in Oddar Meanchey faced yield losses due to drought stress. FAO's assessment of affected and damaged areas due to drought and flooding in the target provinces show that the percentage of damaged areas was higher for flooding compared to drought, indicating that flooding poses a major risk when farmers lack adaptive capacity in the face of major flooding events. This challenge is particularly relevant for rice and cashew production in Kampong Thom province, and also for vegetable production in Siem Reap.

22 Another critical challenge identified by agricultural producers and value chain actors, through a survey, conducted for the preparation of this project, is the occurrence of pest and diseases, particularly due to changes in climatic drivers. Flooding and excessive water can result in increases in pest and disease infestation. For rice production, some major pests in the NTSB include gall midge, stem borer, brown plant hopper, green leafhopper, grasshopper, leaf folder, rice bug, case worm, armyworm and rats. The populations of some of these pests are likely to increase significantly under extreme climate conditions. Mango and cashew producers also note the increasing occurrence of severe pest and disease infestations as a major challenge for production, storage and transportation. Further details can be found in the feasibility study (Annex 2).

Figure 5: Percentage of rice cultivated areas affected (A) and damaged (B) by drought and flood. Data shown represent 20-years' average values.



23 Droughts and pest and diseases are the most common types of shocks in the NTSB (NIS, 2019). Farming households in the region face these risks, and a large proportion of the farming households (20-60%) experienced moderate to severe food shortages due to crop loss and damage on an annual basis (NIS, 2015). Between 37 and 57 % of the households claimed that they often experienced these shocks consecutively, thus having little time to make

a full recovery from such shocks, while many of these households (30-50%) also reported increasing coping capacities as they had built some level of familiarity with dealing with such shocks almost annually (NIS, 2019).

24 Their high susceptibility to droughts stems largely from their heavy reliance on rainfed systems (NIS, 2015). Particularly in the northern sections of the NTSB (i.e., Oddar Meanchey and Preah Vihear) farming activities often take place in relatively hilly terrains, which make irrigation not an option. In Siem Reap and Kampong Thom in the lower sections of the NTSB, irrigation is more common with nearly 50% of farmers using irrigated systems (ibid.); however, with increased uncertainty in water availability due to more frequent droughts observed in recent years, such systems are also becoming less viable in some areas.

IV. Anticipated Climate Impacts on Key Crops in NTSB and Market Opportunities

25 These anticipated impacts of climate change will likely affect the key crops and the associated market opportunities and challenges discussed above differently. Table 2 shows how these changes in rainfall patterns and increased temperatures will affect the production and postharvest handling of cashew, mango, organic rice, and vegetables, respectively, in the NTSB.

26 The analysis of observed and anticipated crop-specific impacts of climate change in the NTSB elucidates the need to increase the adaptive capacity of agriculture-dependent, vulnerable households. While rice remains the predominant crop, the production of cashew, mango, and leafy vegetables has increased in the NTSB. The projected erratic rainfall patterns during the wet season, prolonged droughts during the dry season, and increased pest and diseases will affect the production of rice and these emerging crops. Such climate-induced impacts will disproportionately affect crops such as conventional rice more than the others like cashew, mango, organic rice, and vegetables.

Table 2: Key Crops and Their Climate Exposure and Impacts in the NTSB

Key Crop/ Areas Grown	Climate Exposure and Impacts
Cashew/ Kampong Thom and Preah Vihear	Production (yield) – Food losses: • Heat stress: occurs >34°C and cashew trees are particularly vulnerable to the delayed onset of winter and a cool dry period at flowering; • Droughts and low humidity: relatively tolerant; • Strong winds and storms: damage to trees and flowers; • Pest/Diseases: during the flowering and fruiting season; and • Heavy rain: As per impact from heavy rainfall during cashew's flowering season, farmers face no significant issues as the flowering period starts from November, which is at the end of the rainy season. Affected Quality (yield): • Developing mold due to high humidity at fruiting, spoiled nuts, kernel deterioration, bacterial attack; and • Heavy rains cause the spread of mold and fungal diseases, pests and diseases at flowering and fruiting. Post-harvest Losses: • Increased mold, fungal attacks, damage and loss during transport without proper storage and processing capacity.
Mango/ Oddar Meanchey	Production (yield): • Shifts in seasonal patterns: early-onset of the dry season and drier and longer dry season, combined with increased temperatures, increasing pests at flowering and fruiting; • Heat stress: >46°C, at the flowering stage, beginning of fruiting; • Droughts at flowering and fruiting; • Pest and disease: increased pest and insect-related damage during the flowering seasons in October and November and April and May. Also driven by drier conditions, increased temperatures and erratic rainfall patterns, insect pests can lead to 40-80 % of fruit loss and damage when poorly managed; • Heavy rains and late-onset of the wet season: affect hormone-induced off-season flowering process; and • River Floods: not a major challenge due to the higher elevation of the region. Affected Quality (yield): • Food spoiled, damaged by heavy rains and pests and diseases, rust/fungus attack. Post-harvest Losses: • Increased mold, fungal attacks, damage and loss during transport without proper storage and processing capacity.
Organic Rice/ Preah Vihear	Production (yield) – Food losses: • Droughts: severely affected organic rice production in Kampong Thom from 2000 to 2019 (>10,000 tons of yield losses). Higher resilience to drought conditions in upland where organic rice is produced; • Pest/Diseases fungal attacks: armyworms, rice blight, rice blast. Number of days with optimal temperature for rice blast and bacterial rice blast development shows a downward trend. Significant yield losses reported in 2016 due to armyworm; • River Floods: a major threat to organic rice production. Yield losses are double compared to yield losses due to drought, particularly in lowland areas around the Tonle Sap Basin; • Heavy Rains: Yields losses due to heavy rains (e.g., consequent floods in 2017 led to 20-30% lower yields than 2016); and

	• Heat stress: Exposure to temperatures above the relatively high temperature threshold of 36°C can cause sterility and if daytime maximum temperatures exceed 40°C production will decline. Post-harvest Losses: • Losses due to humid or hot conditions in storage and limited drying and milling capacity at the farm level.
Vegetables/ Siem Reap and Preah Vihear	Production (yield) – Food losses: High seasonality of production (from November to January, early dry season), heavily dependent on natural resources and therefore vulnerable to climate hazards: • Droughts - combined with limited or no irrigation systems, can pose risks to crop failures; • Floods - minor problem; • Heat stress; • Pest/Diseases - e.g., flea beetle, cutworm, leaf folder, armyworm, aphid, lady beetle, snail, butterfly, root rot, bacteria wilt; • Shifts in seasonal patterns; and • River flow reductions. Affected Quality (yield): • vegetable degradation; • variations in vegetable size at production level; • inappropriate timing for harvesting, resulting in over or under maturity; and • short-duration of vegetables storage prone to degradation. Post-harvest Losses: • short-duration storage due to lack of cold storage infrastructure, capacity of products, rapid damaging.

27 At the same time, the increased public awareness of healthy eating and food safety in the country and the growing international tourism market drive consumer demand for higher-quality agricultural products (Ngon, 2019). Premium price markets, which have been established with organic rice and are emerging for cashew, mango, and vegetables in the NTSB, offer opportunities for smallholder farmers, who are particularly vulnerable to the impact of climate change due to their heavy dependency on small scale agriculture. These market-led opportunities can incentivize and afford them the adoption of climate-resilient and higher-value practices and technologies to increase their adaptive capacity through improved livelihood options and income.

28 Furthermore, with the observed increase in drought conditions and unpredictable wet season, many rice farmers in the NTSB have shifted from long-duration varieties to shorter duration fragrant varieties to reduce their exposure to the risk of crop loss during the production stage (NIS, 2020). This trend has been helped by increased domestic and international market demand for fragrant rice and associated market opportunities. This example demonstrates the strength and speed of adaptive response to risks when the response makes economic and financial sense. Thus, this makes it essential for the project to identify climate risks and shifts in crop suitability over the short, medium, and long terms (see Annex 2) and ensure that the adaptive responses the project promotes are effectively tied to economic and financial enablers to expedite the transition. The transition must also be sustainable and equitable.

29 The approach, focusing on premium price market opportunities for the climate change adaptation of smallholder farmers and other local value chain actors, is particularly suited for the northern sections of the NTSB with relatively well-kept agroecological conditions and predominantly small-scale agricultural practices. The premium markets' tendency to favor quality over volume matches the region's relatively small-scale production capacity and limited use of agricultural chemicals compared to other parts of the country (NIS, 2019). Their remoteness and relatively hilly topography make large-scale commercialization, mechanization, and intensification challenging and costly. At the same time, areas along national and provincial roads hold significant potential to increase smallholder farmers' market access through this approach (see Annex 16 - maps). Many smallholder farmers in these areas produce cashew, mango, organic rice, and vegetables in relatively small quantities and lack the necessary capacity and resources to access such market opportunities (Burn et al., 2018; ICEM, 2020). By integrating various certification schemes, including CamGap, GI, SRP and organic certification, which are already operational in the country, smallholder farmers and other local value chain actors in the region can improve their production and processing quality based on their unique strengths to take advantage of the current market trends. Therefore, the project will harness the region's growing capacity to produce cashew, mango, organic rice, and leafy vegetables to instigate transformational change towards climate-resilient agriculture through this particular approach. See Section D.1 for the beneficiary information.

30 In addition to the climate exposure and impacts on these crops, the agriculture sector is responsible for 17.5 % of greenhouse gas emissions (27.1 MtCO2e) (MoE, 2020b). According to the Biennial Update Report (BUR) (2020a), the sector is the second-largest source of emissions in the country, mainly through rice cultivation, including cropland expansion, crop residue and biomass burning, fertilizer use, animal waste, and wetting and drying regimes. However, except for Reducing Emissions from Deforestation and Forest Degradation(REDD+), Cambodia is currently reporting CO_2, CH_4, and N_2O at the Tier 1 methodology level from the 2006 Intergovernmental Panel on Climate Change (IPCC) guidelines. Therefore, it is currently not possible to provide accurate emissions baselines for CO_2, CH_4, and N_2O from

the agriculture sector in the NTSB or monitor changes on a site-specific scale. Therefore, the project will report any mitigation impact as its co-benefit, linked to relevant existing and planned initiatives (see Section B2 (b)) that are dedicated to enhancing Cambodia's climate change mitigation capacity in the agriculture and forestry sectors.

V. Baseline Investment: Complementarity and Coherence (See Annex 2 for further details)

31 Having justified the specific approach under this proposed PEARL project in the NTSB, commercialization, mechanization, intensification, and infrastructural improvement efforts are also crucial, especially in the lowland areas of the NTSB around the Tonle Sap Lake, where such interventions would be highly effective and appropriate. Therefore, an array of agricultural enhancement and climate change adaptation options are necessary to increase the adaptive capacity of agriculture in the NTSB.

32 From this perspective, the efforts under the PEARL project must coordinate with other regional and national initiatives, supporting agricultural adaptation from various angles. Table 3 shows recently launched and planned initiatives supporting sustainable agricultural expansion, climate-smart agriculture, and the nexus between sustainable land management and food security. Their geographical and strategic linkages will make these initiatives highly complementary to the PEARL project and comprise parallel finance[6] amounting to over USD 551 million. With those initiatives currently under development (i.e., ASPIRE-AT and EU-funded deforestation-free agriculture projects), the PEARL project will coordinate closely with the relevant development partners to explore ways to build programmatic and operational linkages. Such linkages will ensure the project's sustainability, replication, and scale-up potential to comprise part of its exit strategy. The PEARL project will also coordinate with other initiatives by IFC, USAID, JICA, and others (see Annex 2 for a detailed map of baseline investments) to ensure its additionality and complementarity in relevant areas.

33 Across these initiatives, the importance of rice production as the country's main staple will continue. For rice and other crops, increasing their production capacity while addressing their climate vulnerability is critical. The need for better, more efficient and accessible agricultural infrastructure, including road networks, power grids, and post-harvest storage and processing facilities are all fundamental enablers that these initiatives work together to provide. Having a programmatic approach to ensuring effective coordination and synergies with these initiatives is, therefore, crucial and ensures that a wide range of adaptive options is available to the sector to meet its specific needs and priorities.

Table 3: Relevant Projects under the Programmatic Coordination

Relevant Project	Investment Size (~million USD)	Type of Synergy	Complementarity with the premium market-based approach
FAO-led project, "Enhancing sustainability of the Transboundary Cambodia - Mekong River Delta Aquifer", under the under the Global Environment Facility (GEF) at inception.	15	Scaling up the impact at the landscape level with the GEF	The project will strengthen environmental sustainability and water security in the Lower Mekong Basin by focusing on improved governance and sustainable utilization of the Cambodia-Mekong River Delta Transboundary Aquifer. The project will support transboundary consensus-building by assessing the current state of groundwater resources, recharge, extraction dynamics, and groundwater-related dependencies of related ecosystems and developing standard measurement methodology and indicators. The project will also demonstrate innovative groundwater management and utilization approaches. The PEARL project will consider and integrate the methodology, indicators, and groundwater management approaches into its IWM and groundwater budgeting and management efforts, particularly in selecting and promoting specific climate-resilient and high-value techniques and technologies that impact groundwater.
FAO-led project, "Promoting Climate-Resilient Livelihoods in Rice-Based Communities in the Tonle Sap Region," with funding from the Least Developed Countries Fund (LDCF), under the GCF, under implementation.	9	Scaling up the impact at the landscape level with the GEF	The project aims to support traditional rice farmers and communities in building their resilience to climate change through an ecosystem-based, market-driven approach in the lower sections of the NTSB and other areas along the Tonle Sap Lake. The project is highly complementary with the premium market-based approach as it offers a range of adaptation support to rice farmers, while the premium market-based approach focuses narrowly on adaptation options through niche market tools and opportunities. Also, given the downstream location of this project along the Tonle Sap Lake, there is significant potential for establishing a landscape-level approach by focusing on upstream-downstream relationships and effects. Activities such as catchment restoration, erosion control, and IPM can be pursued through integrated watershed management (IWM). Also, their shared geographical focus suggests the potential for collaboration on the development of agrometeorological advisory services and dissemination.
ADB-led GCF project, "Climate-Friendly	141	Replicating the experience and	The project aims to improve climate resilience and reduce the carbon footprint of commercial rice, maize, cassava, and mango value chains by investing in climate-resilient agricultural

[6] FAO-led GEF projects are also co-financing specific technical activities of the proposed project.

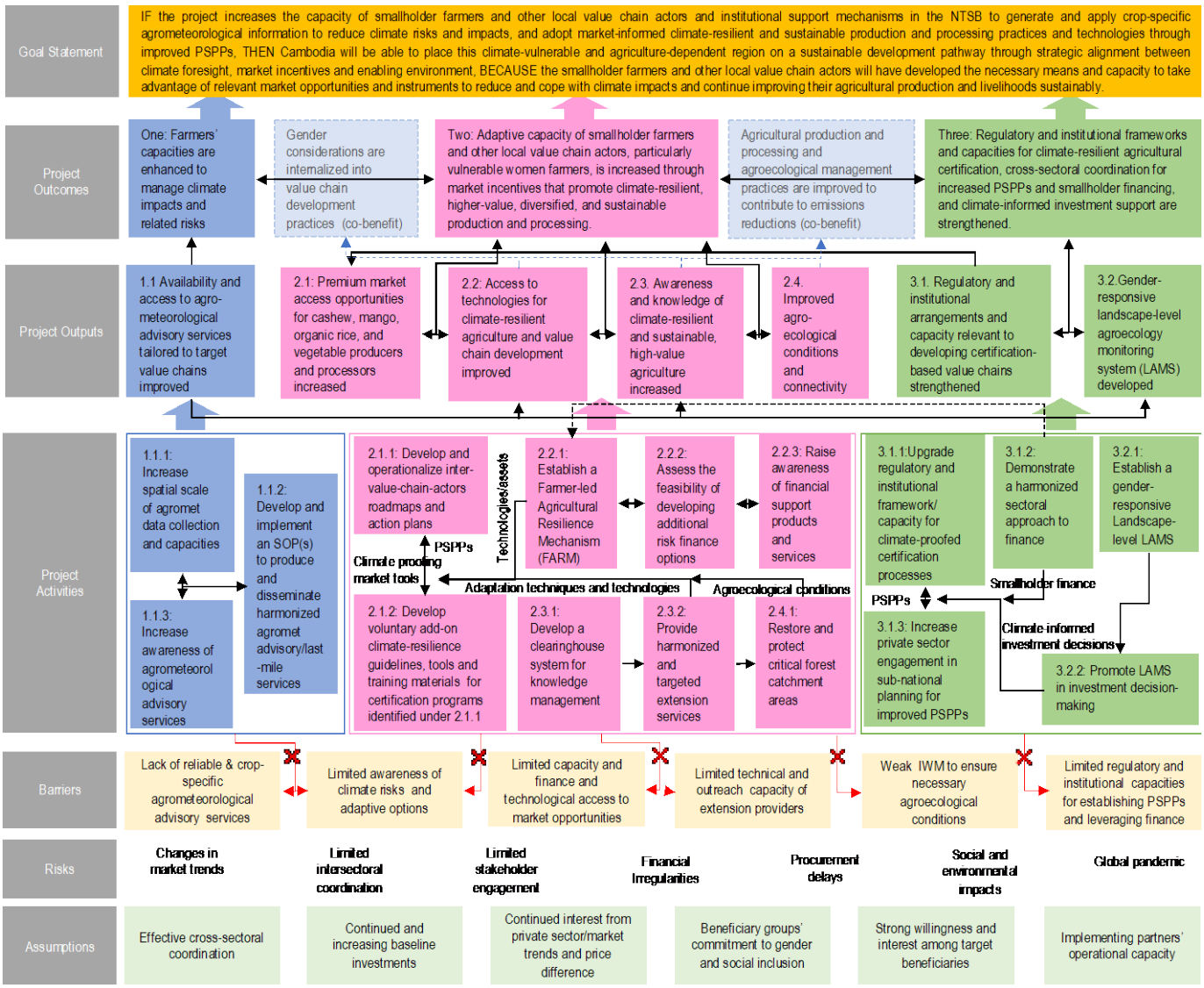
Agribusiness Value Chains Sector (CAVS)", under implementation.		lessons of another GCF project and scaling up the impact at systemic and institutional levels.	production and post-harvest infrastructure. The project will support production intensification and commercialization and promote low-carbon technologies in Kampong Cham and Tbong Khmum provinces along the Mekong River and Kampot and Takeo provinces in the Mekong Delta, another priority agricultural region for climate action. Despite its geographical and production expansion focuses, there is strong complementarity with the premium market-based approach in the NTSB as it also employs a value chain approach, targeting a similar range of crops and promoting the broader adoption of CamGAP. From this perspective, effective knowledge sharing and harmonization of systemic and institutional capacity development support will ensure their additionality and lower the incremental cost of climate change adaptation of agriculture in the country.
World Bank-led Agricultural Sector Diversification Project (CASDP), under implementation.	101	Building on the parallel co-financing for complementary investment results.	The project aims to facilitate the development of diversified agriculture value chains in Battambang, Mondulkiri, Ratanakiri, Stung Treng, Preah Vihear, Kampong Cham, Tboung Khmum, Kratie, Siem Reap, Kandal, Kampong Speu and Kampong Chhnang provinces and Phnom Penh. The project will remove barriers to successfully commercializing small- and medium-sized farmers' agricultural products by enabling agriculture diversification, supporting public infrastructure, and improving agriculture information systems and quality control management. Particularly in Siem Reap and Preah Vihear, the PEARL project will coordinate closely with the CASDP to deliver incremental impact by promoting climate-resilient production and processing and harmonizing processes and procedures of quality control and traceability measures at both the site-specific and systemic levels. The PEARL project will also benefit from the infrastructure support provided by this project.
IFAD-led project, "Sustainable Assets for Agriculture Markets Business and Trade (SAAMBAT)", under implementation.	142	Building on the parallel co-financing for complementary investment results.	Building on its existing projects, "Accelerating Inclusive Markets for Smallholders (AIMS)" and "Agriculture Services for Innovation, Resilience, and Extension (ASPIRE)," the project aims to improve rural road and energy infrastructure, the use of digital technology and skills-base of rural youth entrepreneurs in agriculture around key market centers across the country, including the NTSB. The project's rural agricultural infrastructure improvements, including roads, collection and processing facilities, and renewable energy access, will significantly complement the premium market-based approach in the NTSB. Such infrastructure is an essential enabler of agricultural market development and the necessary conditions for successfully demonstrating adaptation options through alternative agricultural commodities and value chains.
IFAD-led project, "Agriculture Services Programme for an Inclusive Rural Economy and Agricultural Trade (ASPIRE-AT)", currently under development	133	Building on the parallel co-financing for complementary investment results.	As the second phase of the ASPIRE project, the project will use graduation processes to harness natural market forces to grow PG, AC, and union membership to be inclusive of motivated poor individuals in each community to help them achieve scale to attract more buyers and better terms of trade. Such efforts will promote affordable investment pathways for many smallholders, establish affordable initial investment options, and, with reinvestment of profits, generate increasingly higher net incomes. Direct targeting measures will be specifically used to increase women's genuine leadership and promote women and youth into higher status business and entrepreneurship opportunities to serve their communities around the Tonle Sap Lake. The PEARL project will complement ASPIRE-AT by promoting harmonized approaches to climate resilience building (e.g., climate smart practices and technologies and capacity building of agricultural extension services) while drawing on ASPIRE-AT's small-scale agricultural business development expertise and social infrastructure, developed through the AIMS and ASPIRE.
EU-funded project, "Deforestation free agriculture value chains and sustainable food systems" through EU Multi-annual Indicative Programme (MIP) 2021 -2027 under development	TBC (~ Euro 25-30 million)	Scaling up the impact at the landscape level	The proposed EU-funded project will contribute to Cambodia's efforts to set up a sustainable model for national food production by putting emphasis on higher-value products and increased productivity through the introduction of green technology and digital solutions. Activities will be designed with the aim to improve price and quality competitiveness while ensuring equity and inclusivity and maintaining a balance between conservation and development to foster sustainable impacts. It will target inland fisheries and smallholder farmers through services, including improving financial access. Activities under the project will pay special attention to addressing climate vulnerability and environmental degradation to support the implementation of Cambodia's NDC. Early lessons from the PEARL project will offer helpful knowledge and a solid foundation for the project to design its interventions and approaches to ensure its complementarity with the PEARL project and focus on delivering incremental impact. In addition, the PEARL project will coordinate with this project closely to support deforestation free agricultural value chain development and explore market opportunities for deforestation free agricultural products from Cambodia in the EU.
Total	>551		

B.2 (a). Theory of change narrative and diagram (max. 1500 words, approximately 3 pages plus diagram)

34 Based on the above justifications, the value chain approach targeting premium price markets around cashew, mango, organic rice and vegetables illuminates a viable pathway towards climate-resilient, higher-value, inclusive and sustainable agriculture. From this perspective, the theory of change for the proposed PEARL project is provided below

in Figure 6 and in the narrative description of the project components. *Note: the project activities are not discussed in detail in this section as they are discussed in Section B.3.*

Figure 6: Theory of Change



VI. Goal Statement

35 IF the project increases the capacity of smallholder farmers and other local value chain actors and institutional support mechanisms in the NTSB to generate and apply crop-specific agrometeorological information to reduce climate risks and impacts, and adopt market-informed climate-resilient and sustainable production and processing practices and technologies through improved PSPPs, THEN Cambodia will be able to place this climate-vulnerable and agriculture-dependent region on a sustainable development pathway through strategic alignment between climate foresight, market incentives and enabling environment, BECAUSE the smallholder farmers and other local value chain actors will have developed the necessary means and capacity to take advantage of relevant market opportunities and instruments to reduce and cope with climate impacts and continue improving their agricultural production and livelihoods sustainably.

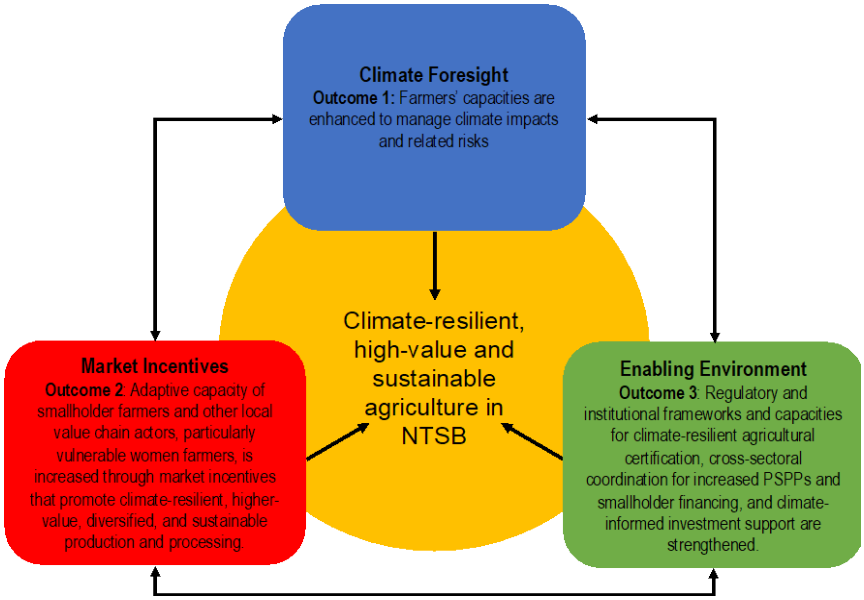
VII. Expected Outcomes and Results

36 The PEARL project will achieve this goal by delivering the three interdependent outcomes (Figure 7). These outcomes (climate foresight, market incentives and enabling environment) will reinforce each other iteratively to transform the NTSB's current agricultural production and processing practices into climate-resilient, high-value and sustainable ones. The project will deliver these outcomes in non-sequential order. Activities under these outcomes will

thus be implemented in a conjoining manner throughout the project to achieve their transformational goal. These outcomes will jointly address the climate and socioeconomic vulnerabilities in the NTSB by instigating behavioral change among smallholder farmers and other small-scale local value chain actors. Such change will promote the adoption of agricultural practices that are informed by crop-specific climate risks, market signals, and opportunities and supported by improved agricultural extension capacity and an enabling environment for increased PSPPs, cross-sectoral coordination, public spending, and private investment for climate-resilient, high-value and sustainable agriculture.

37 **Outcome One (Climate Foresight)** ensures that smallholder farmers and other local value chain actors have a solid understanding of climate-related risks and mitigation strategies. The PEARL project will introduce state-of-the-art technologies to provide crop-specific agrometeorological forecasting, warnings, and related farm management and market advisory services to improve local capacity to identify and respond to risks associated with weather and climatic conditions. The project will also develop the necessary institutional arrangements, including the private sector, to effectively disseminate such advisory services to end-users. The increased agrometeorological forecasting and advisory capacities will directly feed into Outcome Two for adopting climate-resilient techniques and technologies by smallholder farmers and other local value chain actors and promoting risk finance services.

Figure 7: Expected Outcomes of the PEARL Project



38 This outcome will build on several international support initiatives in this area to focus on remaining capacity gaps (Table 4). While requiring more agriculture-specific climate information, critical capacity gaps are mainly found in providing crop-specific advisory services and getting them to end-users on the ground (see Output 1.1, Figure 6). There are institutional and technical capacity limitations, for instance, translating weather and climate data into specific advisory services for agricultural applications, particularly putting into forms and contexts that are easily digestible by farmers and other local value chain actors. Also, dedicated institutional arrangements within and between the MAFF and the Ministry of Water Resources and Meteorology (MoWRM) are necessary to offer consistent and coherent agrometeorological advisory services to end-users. Another area is strengthening extension services and partnerships with private actors and NGOs through local radio and TV stations, social media, and dedicated mobile apps such as Tonle Sap App, Chamkar and EcoKasksekor to disseminate harmonized and quality information to aid decision-making in farm management and postharvest practices. Under this outcome, activities will coordinate with the FAO-led LDCF project, described above in Table 3, to ensure the sustainability and scalability of the project's investment at the landscape level.

Table 4: Agrometeorological Forecasting, Warning and Advisory Service Capacity Gaps

EXISTING CAPACITIES AND INITIATIVES	FOCUS/ACTIVITY						
	Data and service production			Last mile: delivery and uptake by farmers			
	Monitoring, data collection and equipment	Capacities of national institutions	Forecasting	Tailored services to agricultural sectors	Dissemination and extension	Participatory engagement of farmers end-users	Farmer training and demo
DOM[7] Monitoring and forecasts							
UNDP-GEF[8] Early warnings for development							

[7] Department of Meteorology Cambodia

[8] *Strengthening Climate Information and Early Warning Systems in Cambodia to Support Climate Resilient Development and Adaptation to Climate Change*

WMO-CIAT[9] Forecasting and insurance				Coffee, rice, sugar, cassava, rubber, dairy, grazing			
FAO-University Southern Queensland[10] Pest and disease alerts				Pest and disease			
WFP-FAO-UNICEF Social protection				Social protection			
Technical Working Group-CARDI-MAFF Agromet bulletin production							
RIMES-SESAME Forecasts and crop advisories							
Shaded areas indicate some level of investment. Their exact contributions will be assessed during the project preparation phase.							
Indicative PEARL project investment focus and level (✓ some ✓✓ strong)	✓	✓		✓✓ Cashew, mango, organic rice, vegetables	✓✓	✓✓	✓✓

39 Improved and highly accessible and tailored agrometeorological advisory services under this outcome will address critical barriers to climate-informed agriculture by developing the capacity of responsible institutions and end-users, with particular focus on women and other socially excluded minorities, and increasing the awareness of climate risks and options to address such risks (see barrier descriptions below).

40 The primary beneficiary groups of this outcome are smallholder farmers in the target areas producing cashew, mango, organic rice, and vegetables and other small-scale local value chain actors who are involved in postharvest processing and value-addition activities, as crop-specific agrometeorological information can also be used to improve their activity planning and reduce postharvest losses. Another primary beneficiary is a wider range of farmers across the NTSB with improved access to advanced agrometeorological advisory and related last-mile services. Secondary beneficiary groups include public and private agricultural extension service providers and hydrometeorological service providers through technical capacity development concerning the production and dissemination of agrometeorological information.

41 **Outcome Two (Market Incentives)** will bridge the current capacity and resource gaps faced by smallholder farmers and other small-scale local value chain actors in the target areas to adopt alternative practices for climate-resilient and high-value agricultural production and processing. Interwoven with the climate foresight infrastructure and capacities developed under Outcome 1, such practices will significantly increase the overall adaptive capacity of smallholder farmers and other local value chain actors by increasing their climate resilience and financial viability to afford improved adaptation and livelihood options. The project will use the certification schemes already operational in the country, including CamGap, GI, SRP, organic certification, and HACCP, as the primary vehicles of transformation to develop market incentives around cashew, mango, organic rice, and vegetables. The project's support for vegetable production mainly aims to empower and increase the climate change resilience of female farmers and female-headed households as the demographic trends in the region through labor migration by men make vegetable production a vital source of livelihood for many women farmers.

42 This effort will draw on effective public-social-private partnerships (PSPPs) to promote the adoption of certification-based and market-led practices and technologies that are climate-resilient, inclusive and sustainable. A PSPP focuses not only on maximizing efficiency by bringing the public and private sectors together but also on creating shared social values and visions by paying closer attention to various public needs and interests. This effort will include developing smallholder farmers' and other local value chain actors' climate-resilient entrepreneurial skills (with particular focus on youth, women, and other socially excluded minorities) and business and financial literacy and providing tools to make finance available for these beneficiaries, who would otherwise have limited means to adopt climate-resilient and market competitive practices and technologies. Such partnerships are starting to emerge in Cambodia. For example, the Preah

[9] De-Risk: https://public.wmo.int/en/projects/de-risk-south-east-asia

[10] *Regional program on agrometeorology and plant pests and diseases*

Vihear Meanchey Union of Agricultural Cooperatives (PMUAC) for organic rice farmers partners with buyers/exporters such as AMRU-Rice and Signatures of Asia (SoA) to provide guarantees and internal quality control for their contract farmers. This type of partnership increases not only the product quality for the buyers/exporters but also the collective bargaining power of farmers while advancing the government's value-focused agricultural development policy implementation.

43 To enable this market-led transformation, a Farmer-led Agricultural Resilience Mechanism (FARM) will be established to assist smallholder farmers and other small-scale local value chain actors in acquiring technologies and infrastructure assets that are essential for adopting climate-resilient and high-value agricultural production and processing under this outcome (see Output 2.2, Figure 6). Under the FARM, the project will support ACs, FAs, PGs, and agricultural unions in developing individually tailored business plans for climate-resilient and high-value agriculture in partnership with public extension services and private sector and NGO partners. The acquired technologies and infrastructure assets will help operationalize the plans. The FARM will also support the beneficiary groups with business and financial management and increase their governance capacity to ensure a just transition to climate-resilient and high-value agriculture to help implement their business plans technically and operationally (see Section B.3 for further details).

44 As part of the business plan development process, the project will establish partnerships with private sector partners. During the design phase, the project formulation team consulted with several value chain leaders, and Table 5 provides examples of these value chain leaders. As the Accredited Entity (AE) for this project, FAO is currently screening and selecting private partners, starting with consultations with prioritized private sector entities based on a mapping exercise to identify and score their potential roles and contributions to the project, and co-develop tailored engagement plans, including capacity development and resource mobilization strategies. Selected partners will support the beneficiary groups' transition to climate-resilient and higher-value agriculture in several areas, including agricultural supply, direct purchasing, value addition processing, marketing and sales domestically and internationally, agricultural insurance, and microfinance (also related to the FARM). Their business leadership and investment through PSPPs are expected to increase the economic viability of this outcome and establish an avenue through which to crowd in private and public investment. This process will also benefit the private partners in increasing their supply capacity and quality, as they are mainly small to medium-sized enterprises (SMEs) that are also in need of such partnerships to increase their quality control and supply capacity, market outlets and services along the value chains.

Table 5: Examples of Value Chain Leaders Consulted during the Project Development Phase

Category	Potential Partners	Potential Area of Collaboration
Agricultural Supply Providers	AGRIBUDDY	Among agricultural suppliers, Agribuddy is a unique and relatively small operator with limited outreach capacity, focusing primarily on rice producers. Their business model promotes higher standards of quality control and sustainable production through a credit guarantor system. The project will strengthen cooperative arrangements of cashew, mango, and vegetable producers and increase farmers' awareness of higher-value production options to support the expansion of their services into these segments. This will increase farmers' interest in quality supplies and credits for adopting climate-resilient and higher-value practices.
Traders/ Exporters	AMRU RICE SeasonFresh SCP	Traders/exporters like AMRU Rice (for organic rice), SeasonFresh (for mango), and Specialized Cambodian Produce (SCP) (for cashew) look to increase the production capacity of their contract farmers, particularly in premium price segments. Their ability to provide extension support to farmers and other local value chain actors to increase their production capacity and quality control measures is limited. Contract farming often offers farmers secure income and access to credits to afford their transition to climate-resilient and higher-value practices. The project will strengthen farmers' and other local value chain actors' capacities for climate-resilient and higher-value production and post-harvest quality control to expand contract farming arrangements that meet both parties' needs. The project will also ensure the necessary regulatory conditions and enforcement capacities (e.g., Law on the Management of Pesticides and Fertilizers, Seed Law, Agricultural Extension Policy, and operationalization of relevant certification schemes).
Retailers/ Restaurants/ Hotels	Natural Garden	Health food retailers/distributors like Natural Garden are still a novelty. This segment is, however, fast-growing due to increased public awareness of safe food and the recent introduction of the Law on Food Safety. Natural Garden supplies organic rice, vegetables, and fruits to over 80 hotels, restaurants, and supermarkets in the country. They also support small groups of farmers (over 70% women) through contract farming, extension services, and credit access. However, their direct sourcing and outreach capacities are limited. The seasonality and meeting the necessary volume of production remain a challenge. The project will expand the network of organic producers with the necessary extension services to address this challenge and increase farmers' access to market and income to incentivize climate-resilient and higher-value practices.
Microfinance lenders/ Agricultural Insurers		Microfinance and insurance providers like Agriculture and Rural Development Bank of Cambodia (ARDB) (although not fully a private bank), ACLEDA Bank, Angkor Microhenranhvatho Kampuchea (AMK) and Forte Insurance are leading financial institutions supporting Cambodian agriculture. Their current scope is mainly focused on rice production. During the project development, the project preparation team interviewed ACLEDA and AMK. They indicated that very few smallholder farmers and other small-scale local value chain actors are able to access their

		microfinance loan products for technology upgrades due to factors including their lack of collateral or guarantor, repayment capacity, limited business knowledge, entrepreneurial skills, and ACs' poor governance capacity. These banks operate extensive networks of services covering rural communities across the country and express strong interest in expanding their services to smallholder farmers. However, removing the barriers to finance would require effective PSPPs to reduce investment risks and strengthen smallholders' financial and operational capacities. According to a senior representative of AMK, "there is a considerable demand for unsecured finance at the level the project proposes [through the FARM] to meet...but the lack of consumers' awareness and governance capacity of ACs to handle finance need to be addressed first, and we as a bank are limited in term of what we can do in those areas". Forte Insurance also indicated similar needs by increasing smallholder farmers' awareness of risk finance and its benefit and a coordinated public-private effort to make agricultural insurance accessible. These private-sector institutions are eager to adopt a social and environmental management system to align with international financing standards. The project will work with these potential financial sector partners to increase the project beneficiaries' access to finance to accelerate their adoption of climate-resilient and higher-value practices and technologies through the FARM. For example, the FARM beneficiary groups may use the acquired assets and savings accumulated through the use of the assets as group collateral to increase their access to commercial lending and insurance products and services. The project will also coordinate with these partners to promote and establish a harmonized lending system that favors loan and investment applications with built-in climate de-risking measures. In addition, the project will contribute to the National Crop Insurance Program, led by MAFF, Forte Insurance, and others, by assessing the feasibility of developing insurance parameters for cashew, mango, and vegetable producers.

45 These private sector partners' effective engagement is contingent upon several enabling conditions (i.e., capacities of individual farmers and extension services, collective governance of smallholder farmers and other value chain actors, and favorable regulatory and institutional frameworks). Therefore, this outcome, together with Outcome 3, will establish these conditions to reduce the risk and cost of their engagement. Without the project's investment in these social and institutional capacity areas, this market-based approach to building the climate change adaptation of smallholder farmers and other small-scale local value chain actors would likely remain non-bankable from the private sector perspective.

46 Through these partnerships, the PEARL project will promote several food safety, sustainability, and worker welfare certification schemes that are either currently operational to provide market-based incentives for the transition to climate-resilient, higher-value, inclusive and sustainable agriculture (see Output 2.1, Figure 6). Since these certification schemes focus mainly on ecological, social, and food safety aspects, the project will also support their alignment with climate risk considerations to operate as market enablers for climate-resilient agriculture. Using these certification schemes is timely and strategic, given the increased public interest in safe and sustainably produced food in the country The project will build on this market trend to establish strategic partnerships between government institutions, private sector entities and representative bodies of farmers and other local value chain actors.

47 Underpinned by these market-based incentives, the project will promote the adoption of climate-resilient, high-value and sustainable techniques and technologies, including small-scale infrastructure among smallholder farmers and other local value chain actors to support their transition (Output 2.3, see Figure 6). The FARM will directly complement this activity through strategic business planning and providing innovative support for acquiring and adopting the technologies and techniques identified in the business plans.

48 Concurrently, the project will also promote an integrated watershed management (IWM) approach, incrementally building on the existing conservation and REDD+ related efforts of the government and development partners, to improve agroecological conditions at the site-specific and landscape levels (Output 2.4, see Figure 6). IWM activities will support community protected areas (CPAs) and community forests (CFs) in critical catchment areas linked to cashew, mango, organic rice, and vegetable production to strengthen catchment restoration and protection efforts and improve their livelihoods. The activities will promote alternative livelihood options (e.g., apiculture that also increases pollination services, agroforestry fruits tourism, organic rice production, value addition to non-timber forest products (NTFPs)), and development of deforestation-free agricultural products and market opportunities.

49 These activities under this outcome will overcome the three fundamental barriers to the adaptation of agriculture to climate change in the NTSB – limited knowledge of adaptive practices, and a lack of access to finance and technologies, as identified in the Climate Change Action Plan for Agriculture, Forestry and Fisheries Sector 2016-2020 (CCPAP-AFF) (MAFF, 2016) (see barrier descriptions below). Building on the improved agrometeorological advisory services and increased awareness of risks under Outcome One, this outcome will directly enable the beneficiaries' transition to climate-resilient, higher-value and sustainable agriculture by making the necessary knowledge, financial and technological support available and accessible.

50 Under this outcome, Outputs 2.1, 2.2, and 2.3 target both smallholder farmers and other small-scale local value-chain actors as their primary beneficiaries through streamlined and climate-proofed certification processes, certification-based business planning for production and processing, related capacity development, improved technological access for operationalizing business plans, demonstration and adoption of climate-resilient and high-value production and processing practices and technologies relevant to the business plans. Members of CPAs and CFs and immediate downstream farmers are the primary beneficiary groups of Output 2.4.

51 **Outcome Three (Enabling Environment)** strengthens the necessary regulatory and institutional frameworks and capacities for climate-resilient agricultural certification, cross-sectoral coordination for increased PSPPs and smallholder financing, and climate-informed investment support to ensure the successful delivery of Outcomes 1 and 2. Thus, activities under this outcome will be implemented in conjunction with those under the other outcomes through a positive feedback loop (see Figure 7). It ensures the effective use of certification programs as primary vehicles for positive behavioral change while promoting effective PSPPs through the existing national and provincial stakeholder coordination mechanisms (Output 3.1, see Figure 6). Such mechanisms include the National Council for Sustainable Development (NCSD), National Committee for Sub-National Democratic Development (NCDD), and public forums at the provincial level. The project will partner with the Agricultural and Rural Development Bank of Cambodia (ARDB) and private financial institutions to develop a lending scorecard system to consider climate resilience, inclusivity, and sustainability as crucial eligibility criteria in screening loan applications. This system would promote not only an overall shift towards climate-resilient agriculture within the sector but also a just transition by increasing smallholder farmers and other local value chain actors' ability to access finance through climate change adaptation.

52 The project will also establish a gender-responsive, landscape-level agroecology monitoring system (LAMS) to crowd in public and private investments in climate-resilient, higher-value and sustainable agriculture (Output 3.2, see Figure 6). This is a climate-informed investment decision support system for public and private investors to funnel investment into a climate-resilient and just transition of the sector. The LAMS will also be linked with other climate data systems such as the national greenhouse gas inventory (NGHGI) and National Forest Monitoring System to support Cambodia’s reporting to the UNFCCC through the Enhanced Transparency Framework (ETF) under the Paris Agreement.

53 These outputs under this outcome will remove systemic and institutional barriers that prevent concerted efforts between the public and private actors and levels of government to direct their financial, technological, and human resources to put the agriculture sector on a climate-resilient, inclusive and sustainable pathway to ensure a just transformation.

54 These three outcomes described above have been identified based on an extensive stakeholder consultation process (see Annex 7), various feasibility studies (see Annex 2), including a review of baseline investments and parallel funding activities to ensure the additionality and complementarity of these outcomes and associated outputs and activities.

55 Under this outcome, the target beneficiaries of Output 3.1 include the public institutions and private sector partners through climate-proofing of certification processes, integration of the private sector into local development planning, and standardization of the smallholder lending approach, prioritizing resilience building. Public institutions and private investors involved in the agriculture sector will benefit from Output 3.2 through LAMS, supporting their climate-informed investment decision-making processes to support the project goal, and establishing the country's enhanced transparency framework concerning agriculture.

56 These outcomes will support three GCF Adaptation Result Areas (ARAs) - ARA 1 Most vulnerable people and communities, ARA 2 Health, well-being, food and water security, and ARA 4 Ecosystems and ecosystem services. In addition, the project will also deliver the following two co-benefits related to climate change mitigation in the agriculture, forestry, and other land-use sectors, biodiversity conservation, and women's empowerment, as described in Section B.2 (b).

Co-benefit One: Agricultural production, and processing and agroecological management practices are improved to contribute to GHG emissions reductions.
Co-benefit Two: Gender considerations are fully internalized into climate-resilient value chain development practices.

VIII. Barriers

57 Despite the growing premium price segments and related opportunities, most smallholder farmers' current production in the NTSB are generally described as low yield, low-quality, and low-value. There are limited value addition activities. These conditions afford most smallholder farmers and other local value chain actors limited means and opportunities to adopt climate-resilient and higher-value practices and livelihoods.

58 The following six broad barriers prevent their transition to climate-resilient and high-value agriculture that often compound one another to contribute to the current baseline situation in which most smallholder farmers and local value chain actors have the very limited adaptive capacity and options to cope with the impact of climate change. Another compounding factor that makes these barriers disproportionally challenging for women farmers and value chain actors is the inequality between men and women. Women tend to be excluded from decision-making processes and capacity development opportunities and have far more limited access to information than men. These conditions call for special attention to the needs of women and gender considerations when removing these barriers (e.g., ensuring women's representation and leadership in decision-making, and providing alternative venues and flexible schedules for training to increase women's participation).

Barrier 1: Lack of reliable and crop-specific agrometeorological forecasting and related advisory services to support farmers' decision-making through anticipatory action and on-farm planning.

59 The lack of access to reliable and crop-specific agrometeorological forecasting and advisory services by farmers in the NTSB has hampered progress towards swiftly adopting their farming practices to the changes in the seasonality of monsoon, increased rainfall variability, higher temperatures, and outbreaks of climate-driven pest and diseases (FAO, 2022). With international support, Cambodia has developed a network of hydrometeorological stations to provide general forecasting and early warning services (Table 4); however, there are significant infrastructural and capacity gaps in the provision and dissemination of agrometeorological forecasting and advisory services, including the last mile. Limited knowledge of climate-related risks among farmers and other local value chain actors is, therefore, a critical barrier. This barrier will be removed through Output 1.1. (Activities 1.1.1, 1.1.2 and 1.1.3).

Barrier 2: Limited awareness of climate risks and climate-resilient and higher-value options among smallholder farmers and other small-scale local value chain actors.

60 The limited awareness of risks and climate-resilient and higher-value options, promoted through extension services, training, social media platforms, and mobile apps, is another barrier attributed to the weak institutional and cross-sectoral coordination. It prevents smallholder farmers and other local value chain actors, particularly women, and other socially excluded minorities, from adopting alternative production technologies and techniques that are climate-resilient, sustainable, and high-value. As a result, unsustainable practices that exacerbate vulnerabilities – including mono-cropping, increased use of chemical fertilizers and pesticides, and poor soil nutrient management – have continued. The increased use of pesticides and other chemicals has, in turn, limited their opportunity to access premium price markets and raised food safety and environmental concerns (Burn et al., 2018). The projected increase in pest and diseases due to climate change makes the role of IPM and an effort to limit and minimize agricultural chemicals and improve agrometeorological forecasting and advisory capacities particularly essential (Cite Climate Report). From this perspective, the knowledge of alternative practices and technologies among farmers and other local value chain actors in the NTSB will be increased through Output 2.3 - knowledge management (Activity 2.3.1).

Barrier 3: Limited capacity and financial and technological access for smallholder farmers and other small-scale local value chain actors to utilize premium price market opportunities as vehicles for adopting climate-resilient and high-value practices.

61 Limited market knowledge and financial access among smallholder farmers and other local value chain actors for adopting appropriate technologies and techniques pose a related challenge (MAFF, 2013; Kula, Turner and Sar, 2015; FAO, 2016). These limitations make premium price markets inaccessible for these actors, as they lack the necessary resources and knowledge to target such markets or meet the required production volumes and quality standards. This barrier will be addressed through Outputs 2.1 and 2.2 to support market-led business planning (Activities 2.1.1 and 2.1.2) and make low-cost agricultural finance available (Activities 2.2.1 and 2.2.3) to these actors, particularly women and other socially excluded minorities, who would otherwise be unable to access finance as they lack the necessary collateral or guarantor. Also, ways to expand agricultural insurance services will be explored through Activities 2.2.2 to address their risk exposure.

Barrier 4: Limited outreach capacity and market-based knowledge of agricultural extension providers to support the necessary behavioral change and shift in agricultural practice.

62 The current farming practices of most smallholder farmers in the NTSB follow the traditional focus of agricultural policy and extension services, which have placed a strong emphasis on productivity (i.e., qualitative objectives and indicators) (Burn et al., 2018). As a result, this has generated a significant surplus of rice, leading to price decreases. Although the focus has gradually shifted towards value addition and differentiation by quality, particularly given the increased production costs, including energy and transportation, the transition has been slow. This is mainly due to a lack of outreach capacity and market-based knowledge of extension services and effective public-private partnerships (ibid.). Therefore, increased efforts are necessary to develop the ability of extension services to reach out to farmers and other value chain actors, including SMEs, to provide climate-informed, market-driven and quality-focused support services while leveraging support from larger private actors like buyers and exporters. Critical areas of capacity development include quality management and compliance with international standards through certifications. Output 2.3 will address this barrier by developing the capacities of extension services, including private extension providers, farmers, and other value chain actors to pursue climate-resilient and high-value agriculture (Activities 2.3.2).

Barrier 5: Weak IWM to ensure good agroecological conditions and connectivity and ecological functions that can also reduce natural disaster risks.

63 Deforestation and forest degradation due to rapid agricultural expansion for monoculture plantations through large scale agro-industrial Economic Land Concessions (ELCs) and distribution of land titles under Social Land Concessions (SLCs) have led to severe degradation of agroecological conditions at the farm and landscape levels in areas, particularly along waterways (Forest Trends, 2015; Sasaki et al., 2016; RGC, 2017; MoE, 2020b). The **sub-optimal watershed management practices to ensure good agroecological conditions and ecosystem services** have depleted soil nutrients and the supply and quality of water and increased natural disaster risks through soil erosion and sedimentation along rivers and riparian areas downstream. The predicted increase in rainfall intensity is likely to compound these disaster risks to cause more localized flooding and landslides to reduce agricultural yields and product quality. Output 2.4 thus aims to remove this barrier by promoting a range of measures, including agroforestry, the development of livelihood options, and IWM in critical catchment areas, among farmers and members of CPAs and CFs. This intervention will also help convert croplands used for intensive monoculture (e.g., cassava) production into cashew or mango orchards with intercropping to enhance agroecological functions and benefits (Bernacki et al., 2018; Burn et al., 2018).

Barrier 6: Limited regulatory and institutional capacities for establishing effective PSPPs and leveraging public and private investment for climate-resilient, high-value and sustainable agriculture.

64 The lack of favorable regulatory conditions and institutional arrangements is another barrier to ensure enabling conditions for leveraging effective PSPPs and public and private investment for climate-resilient, high-value and inclusive agriculture. The regulatory compliance costs borne by individual farmers, cooperatives, associations, unions and SMEs for agricultural and food safety certification processes are relatively high, compared to those in other countries in the region, and procedures and requirements need to be streamlined to be more accessible (IFC, 2015; Burn, 2018; Burn et al., 2018). Output 3.1 will address this barrier by supporting harmonized processes at the regulatory and institutional levels and ensuring climate risks are adequately taken into consideration by these certification processes (Activity 3.1.1). Also, Activity 3.1.2 will establish a harmonized system for agricultural lending at the institutional level to increase the availability of low-cost finance for smallholder farmers and other local value chain actors. Intersectoral coordination mechanisms will be improved through Activity 3.1.3 to direct public spending into areas that promote climate-resilient, high-value, and inclusive agriculture and create bankable projects to crowd in private investment. To complement this effort, Output 3.2 will develop a system to enable strategic and climate-informed investment decisions by the public and private sectors to support the sectoral transformation.

IX. Risks and Assumptions

65 There are several risks and assumptions, as seen in Figure 6. Section F provides a complete description of the risks and their mitigation measures. The risks involved in the project are categorized as technical and operational, reputational, financial, and other. The technical and operational risks include 1) Rapid changes in market trends, 2) Limited intersectoral coordination and institutional arrangements, 3) Limited stakeholder engagement, and 4) Procurement delays in operationalizing the FARM arrangements. As described in Section F, a range of adaptive measures and stakeholder engagement strategies will address these risks.

66 The reputational risk concerns the potentially harmful social and environmental impacts identified under the Social and Environmental Management Framework (ESMF) (see Annex 6) and Gender Action Plan (Annex 8). Specific mitigation measures are described in these annexes and briefly summarized in Section G.

67 There is also a risk associated with financial irregularities, and this risk will be addressed by implementing the necessary checks and balances for financial regulation to address this risk (see Section F). Another risk relates to the recent global pandemic (i.e., COVID19), and it has posed several operational challenges in the country. The project will take stock of lessons learned and best practices from the current pandemic and apply relevant measures to minimize the risk. See Section F for more details.

68 Key assumptions include effective coordination between relevant ministries, sub-national governments, and private actors, continued and increased public investment for systemic, institutional, and individual capacity development to complement the project's focus and investment on climate resilience, and substantial interest and support from the private sector, NGOs, farmers, and other local value chain actors. This partly rests on the assumption that the current market demand for premium agricultural products and the price differentiation between non-premium and premium products will continue. Also, the project beneficiaries' willingness to adopt new and alternative technologies and practices (i.e., behavioral change) is particularly essential for the success of this project. It requires a clear understanding of risks and benefits, ensured through extensive hands-on support programs and awareness-raising activities, including on gender and social inclusion. Key elements of these assumptions are also discussed as part of the risk identification and mitigation measures in Section F below.

B.2 (b). Outcome mapping to GCF results areas and co-benefit categorization

Outcome number	GCF Mitigation Results Area (MRA 1-4)				GCF Adaptation Results Area (ARA 1-4)			
	MRA 1 Energy generation and access	MRA 2 Low-emission transport	MRA 3 Building, cities, industries, appliances	MRA 4 Forestry and land use	ARA 1 Most vulnerable people and communities	ARA 2 Health, well-being, food and water security	ARA 3 Infrastructure and built environment	ARA 4 Ecosystems and ecosystem services
Outcome 1: Climate Resilience	☐	☐	☐	☐	☒	☐	☐	☐
Outcome 2:. Higher-Value Agriculture	☐	☐	☐	☐	☒	☒	☐	☒
Outcome 3: Enabling Environment	☐	☐	☐	☐	☒	☒	☐	☐

69 The project will focus its investment exclusively on generating adaptation results.

70 Meanwhile, the project will produce a co-benefit in climate change mitigation through improved soil and residue management, postharvest quality control, and processing to reduce food waste and critical catchment forest protection and restoration. Cambodia is currently reporting CO_2, CH_4, and N_2O at the Tier 1 methodology level (i.e., default values) from the 2006 IPCC guidelines, except for CO_2 emissions and removals from REDD+ (at the Tier 2 level). Given the technical limitations, the project will only report its activity-level contribution that may be converted to mitigation impacts at the Tier 1 methodology level (e.g., # of trees planted, ha. of forest restored, ha. of rice field under enhanced soil management regime, including postharvest residue management and optimized fertilizer application, reduced volume of chemical fertilizer use and postharvest loss). The project will coordinate with the National Forest Monitoring System (NFMS) for REDD+, which monitors and reports forest changes on the national scale. The project will also coordinate with the ongoing FAO/GEF initiative, "Capacity-building Initiative for Transparency (CBIT)[11]," which is currently working on establishing emission baselines in agriculture through crop mapping and assessment of biomass burning in the agriculture sector. Furthermore, the project will establish an operational link with a new FAO/UNDP project, “Scaling Up Climate Ambition on Land Use And Agriculture through NDCs And NAPs (SCALA)," aiming to enhance Cambodia's sustainable forest management efforts and animal waste management, including activities related to emissions measurement and monitoring. These linkages with the ongoing and planned initiatives will ensure that this co-benfit in climate change mitigation makes a tangible and cost-effective contribution.

[11] The United Sates Government, through the SilvaCarbon Programme, has also been collaborating with the CBIT project to support the General Directorate for Agriculture in improving the activity data, including carbon emissions from biomass burning, from the agriculture sector through the machine learning models. This collaboration aims to improve the spatial data for several priority crops and brings in the Royal University of Agriculture to increase national capacity for emission data collection.

71 These activities linked to a co-benefit in climate change mitigation will also enhance agroecological conditions and ecosystem services, thus improving habitat connectivity across the production landscape. This will also support the ecosystem-based adaptation of local communities to climate change.

72 Another co-benefit of this project is women's empowerment. The project will design and implement activities explicitly targeting female-headed farming households and female vegetable farmers to address their unique socioeconomic vulnerabilities, making them particularly vulnerable to climate change. The project's overall gender-responsive approach is committed to paying specific attention to delivering outcomes that reflect an understanding of gender roles and inequalities. Based on this approach, the project will address challenges specific to women farmers, including time constraints and power disparities, through capacity, institutional, and support mechanism development activities. In addition to the agricultural certifications, the project will also explore the possibility of introducing the W+[12] standard, which measures women's empowerment in a quantifiable manner, gives a monetary value to results, and creates an additional channel to financial resources for female farmers. Such additional finance could provide a sustainable mechanism for supporting female farmers' empowerment and climate adaptation. To ensure this co-benefit, there will be a full-time national gender expert to implement the Gender Action Plan (Annex 8).

Co-benefit number	Co-benefit					
	Environmental	Social	Economic	Gender	Adaptation	Mitigation
Agricultural production and processing and agroecological management practices are improved to contribute to GHG emissions reductions.	☐	☐	☐	☐	☐	☒
Gender considerations are fully internalized into climate-resilient value chain development practices.	☐	☐	☐	☒	☐	☐

B.3. Project/programme description (max. 2500 words, approximately 5 pages)

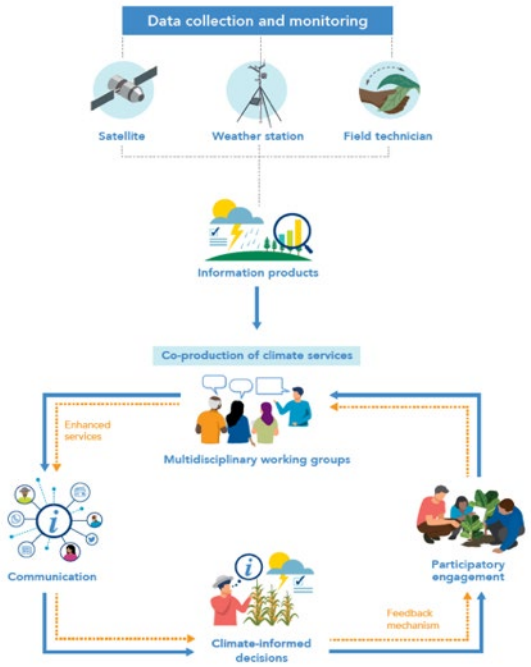
X. General Approach

73 The proposed PEARL project builds on the Royal Government of Cambodia (RGC)'s vision for the NTSB's climate-adapted agriculture that is high-value, and sustainable based on the logic described above to provide a range of adaptive options for smallholder farmers and SMEs through market-based mechanisms (MAFF, 2016; MoE, 2020b). The PEARL project will enhance the climate resilience of smallholder farmers and other local value chain actors, including SMEs in the NTSB, by removing the barriers identified above to climate-resilient, inclusive, high-value, and sustainable agriculture. This will build on the existing government and non-government partners' efforts on agricultural extension and sustainable agricultural expansion to ensure Cambodia's food security and safety. For instance, the General Directorate of Agriculture within MAFF (GDA/MAFF) has worked extensively on quality seed production, market expansion, and agricultural intensification through its extension services and awareness-raising activities.

74 The following outcomes, outputs and activities are designed to build on mutually dependent relationships between the three fundamental pillars - climate resilience, high-value agriculture, and an enabling policy and institutional environment. The approach will harness market forces through agricultural and food safety certification and associated value chain development to trigger transformational change. Through the integration and streamlining of the three

[12] A women-specific standard measuring women's empowerment and giving a monetary value to results to provide financial resources to women. This certification (https://www.wplus.org) scheme would mainly apply to women farmers involved in vegetable production under this project.

Figure 8 Value chain for an effective provision of climate services



pillars, the project will also ensure the PEARL project's overall additionality and complementarity with co-financing and parallel funding activities.

XI. Narrative Descriptions of Expected Outcomes, Outputs and Activities (See Annex 2 for further details)

EXPECTED OUTCOME ONE: FARMERS' CAPACITIES ARE ENHANCED TO MANAGE CLIMATE IMPACTS AND RELATED RISKS

75 This outcome will provide farmers and local communities with access to tailored and crop-specific agrometeorological advisory services. The component will also increase the awareness of climate risks among farmers and other local value chain actors to enhance their ability to identify and manage climate-related risks and vulnerabilities concerning their agricultural production, processing, and livelihoods. Generating and disseminating agrometeorological information will foster co-production of services across relevant institutions, particularly the MAFF and MoWRAM, and incorporate various data sets, including weather forecasts, seasonal forecasts, crop calendars, crop production, and harvest information, and pest and disease information. Concurrently, this component will also systematically strengthen the capacity of agricultural extension services and technical functions in both the public and private sectors and develop effective public and private partnerships to ensure the effective dissemination of agrometeorological advisory information through increased and extended outreach capacities.

76 Climate services involve the production, translation, transfer, and use of climate knowledge and information for climate-informed decision-making, including at the farm level. These services will utilize the available Internet of Things (IoT) technologies for data collection, processing, and dissemination (e.g., use of mobile apps). Key attributes for effective climate services to meet the needs of users include timeliness, accessibility, dependability, usability and equity. Some of the main barriers to the effective and equitable communication of climate services are the lack of national capacity for communication, lack of client-driven tailoring of services, insufficient translation of relevant services into actionable products, and limited engagement with other actors involved in agricultural value chains (private and public).

77 The framework put forward in Figure 8 from FAO's Global Outlook on Climate Services in Agriculture (FAO, 2021), highlights key steps for the effective provision of climate services, which are fulfilled by various actors depending on the local context. It is important to highlight the gaps at any stage of the framework will jeopardize efforts to develop services that are effectively delivered and applied by intended users. Every aspect of the climate services framework must be strengthened to ensure that the last mile barrier is overcome, and that information can lead to strategic agricultural decision-making.

78 Cambodia has undertaken various initiatives to increase agrometeorological service capacity through multiple projects over the last decade. These efforts include building weather and agriculture infrastructure and improving agrometeorological forecasting skills in collaboration with development partners such as World Bank, United Nations Development Programme (UNDP), Asian Development Bank (ADB), the United Nations Office for Disaster Risk Reduction (UNDRR), the World Meteorological Organization (WMO) with financial support from the Global Facility for Disaster Reduction and Recovery (GFDRR), Association of Southeast Asian Nations (ASEAN), Sub-Committee on Meteorology and Geophysics (SCMG), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) Germany, Regional Integrated Multi-hazard early Warning System for Africa and Asia (RIMES), Japan International Cooperation Agency (JICA) and Japan Meteorological Agency (JMA).

79 However, as shown in Table 6 below, it is evident that in Cambodia, current efforts and investments are focused on the first stages of the climate services framework, toward the monitoring and production of information products but far fewer investments are focused toward the later stages of the framework, or the "last mile", which focuses on the tailoring, dissemination and uptake of climate services for farmers.

80 Against the framework of climate services, a capacity need assessment in four capacity areas – 1) meteorological and hydrometeorological forecasting; 2) agricultural data; 3) pest and disease forecasting; and 4) outreach and agrometeorological information dissemination – was conducted during the project preparation stage (see Annex 2). The assessment findings suggest challenges and recommend actions in seven critical areas under the climate service framework as seen in Table 6.

Table 6 Major challenges and recommendations to overcome last mile barrier to climate services in Cambodia

Climate services framework	Major challenges	Recommendations for investment
1. Data collection, monitoring and forecasting	• Insufficient observational network (automated and manual) with essential meteorological and agrometeorological variables required for developing agrometeorological services. • Weak technical capacity for data storage.	• Rehabilitate existing weather stations and procure additional stations in NTSB. • Support technical capacity for the maintenance of weather stations and data collection. • Upgrade the forecasting capabilities by improving the access and use of global and regional datasets, products and tools. • Develop dynamic cropping calendars that integrate forecasted precipitation patterns with sufficient time for farmers to adjust their planting dates. • Support agricultural institutions (i.e., MAFF, CARDI and Royal University of Agriculture) with tools and technical capacity for monitoring and digitalization of agriculture data
2. Data sharing and coordination of relevant agencies	• Lack of coordinated and digitalized collection of agriculture and pest/disease data through agricultural ministries (e.g., MAFF, CARDI and Royal University of Agriculture) and research institutions. • No coordinated database or mechanism for data sharing between institutions. • Limited technical, financial, and human resources available to support national staff to collaborate and regularly meet as task force (i.e., Technical Working Group led by MAFF and MoWRAM). • Lack of incentive for collaboration and data sharing. • Insufficient access to necessary technologies for digital and online data collection and sharing. • Data sharing on a payment basis.	• Invest in further strengthening of existing agrometeorological technical working group and support national institutions to join regular meetings. • Strengthen governance arrangements and formalized agreements, including coordination and communication mechanisms within MoWRAM and stakeholders across sectors. • Invest in data collection technologies that facilitate digitalization (tablets, handheld devices) and development of national databases where information can be shared easily between relevant institutions.
3. Co-production of tailored agrometeorological advisories	• Lack of mechanisms for exchange of information among key stakeholders (including private sector, ACs, FAs, etc.). • Lack of standard operating procedures for the coordination and co-production of agrometeorological services by multiple stakeholders. • Weak collaboration or communication between MAFF, MoWRM and other key institutions.	• Prepare concrete national road maps towards strengthening and operationalizing agrometeorological services. • Develop a standardized national framework for data collection, sharing, analysis, translation into actionable services, and last-mile communication processes is systematically documented. • Support sensitization workshops and training sessions to encourage dialogue and bring together key actors, including farmers and end-users.
4. Communication of services to the last mile	• Challenges related to translating climate and agronomic information. • Inadequate means for communicating the information. • Lack of understanding of how farmers in NTSB are accessing information or ICT used.	• Invest in surveys and information collection from farmers and target users to better understand how they prefer to receive information (communication means, format etc.). • Invest in development of products and ICT means based on the needs assessment of farmers. • Establish an effective two-way communication and timely data collection and sharing between information providers and users. • Build the capacity of smallholder farmers, women, poor and socially marginalized groups to use ICT tools.

5. Participatory engagement of last mile	• Lack of awareness of climate and agronomic information generated by MoWRAM, MAFF and other national institutions. • Lack of effective two-way communication between agrometeorological services providers and users	• Promote participatory approaches such as the Participatory Integrated Climate Services for Agriculture (PICSA) approach or FAO Farmer Field Schools (FFSs) to ensure information uptake. • Invest in focused training or FFSs on IPM. • Support participatory scenario planning processes consisting of different interactive and iterative learning processes. • Invest in pilot programs or community outreach initiatives to engage farmers with agrometeorological services. • Financially support the engagement of farmers and end-users in national tasks forces for service production.
6. Climate-informed actions	• Insufficient resources to apply climate informed recommendations even if information is available (e.g., irrigation or land preparation capacity) • Lack of access by farming communities to forecasting information that is translated into actionable climate-resilient advice tailored to the type of production (i.e., for cashew, mango, organic rice, and vegetables). • Lack of timely climate information to the last mile, as it usually reaches households too late to make decisions (e.g., planting and harvesting dates). • Lack of extension or advisory support on how to implement climate information actions.	• Invest in the translation of agrometeorological data into services specific to target crops and relevant for climate sensitive periods of crop production for cashew, mango, organic rice and vegetables. • Support FAs, ACs, and extension services to support farmers with understanding of how to implement climate informed actions. • Through support to FAs and ACs, increase farmers resources and access to necessary equipment, information and financial services, including risk finance products (i.e., insurance) to implement recommended actions.

Output 1.1: Availability and access to agrometeorological advisory services tailored to target value chains improved among smallholder farmers and local value chain actors, particularly women farmers and value chain actors.

81 Based on the above recommendations, this output will deliver an improved system of agrometeorological advisory services that are tailored to the project's target crops in these seven critical areas. Advisory information will be delivered to end-users through a variety of means, including the existing mobile apps for agricultural advisory dissemination and data collection (e.g., Tonle Sap App, Chamkar and EcoKasksekor), social media channels, TV and radio programs, community bulletins, community speakers, agricultural extension services, web platform hosted by MAFF. Meanwhile, those recommendations that are linked to particular risk mitigation options through farm management practices and resource access will be implemented under Component 2.

82 This output will benefit a total of 450,000 smallholder farmers (40-60% women) in the NTSB involved in the target value chains over the project lifetime. This figure translates to about 75% of the agriculture-dependent population across the 24 target districts. While this output aims to support all smallholder farmers in the target areas, this target figure derives from a realistic estimate of the project's outreach potential (please see Section D.1 for more details). Furthermore, a total of nearly 1,000 public and private extension providers, including NGOs, will be trained under this output (see Section E.5 for more details). The output will be implemented under the joint leadership of MoWRAM and MAFF with technical support from FAO Cambodia (see Table 11 for more details).

Activities under Output 1.1. (See Section E.6.)

Activities, Descriptions and Sub-Activities
Activity 1.1.1: Increase the spatial scale of agrometeorological data collection and capacity for data processing to produce enhanced agrometeorological forecasts and advisory services tailored for target value chain crops. **Description:** Upgraded agrometeorological data collection and processing capacities will enable an analysis of real-time weather and climate information, seasonal forecasts, historical records, crop parameters, soil moisture and temperatures, and pest and disease characteristics through relevant methodologies to provide crop-specific warnings and advisory services. • Sub-activity 1.1.1.1: Mobilize the TWG-AW to review baseline conditions and capacity and data gaps to validate the priority stations for additional sensor upgrades, strategic locations for adding new agrometeorological stations, and training needs. • Sub-activity 1.1.1.2: Upgrade existing hardware and software at the selected priority stations and install new agrometeorological stations. • Sub-activities 1.1.1.3: Design and roll out an annual training program for station managers, data analysts, and system administrators.

Activity 1.1.2: Develop SOPs for the production and dissemination of agrometeorological advisory services and data sharing needs and architecture, targeting cashew, mango, rice, and vegetables through a variety of mediums.

Description: Crop-specific SOPs will allow farmers to grow, harvest and store the target crops and other local value chain actors to anticipate yields and processing volumes with reliable information and consistent advisory services to make the target value chains less vulnerable to climate change. The SOPs will ensure coordination among public and private extension services and provide highly tailored information through multiple mediums. The SOPs will be placed under the existing SOP for general hydrometeorological advisory services, developed by the regional FAO project and the University of Queensland and WMO project, to provide highly tailored information. The SOPs will also consider strategies to reduce food loss along each value chain.

- Sub-activity 1.1.2.1: Mobilize the TWG -AW with additional stakeholders to develop the SOPs for the production and dissemination of crop-specific agrometeorological advisory information.
- Sub-activity 1.1.2.2: Establish a central database based on harmonized data management and sharing agreements under the SOPs with dedicated information dissemination and outreach mediums (e.g., web platform hosted by MAFF, mobile apps (i.e., Tonle Sap App, Chamkar and EcoKasksekor), social media channels, TV and radio programs, community bulletins, community speakers, FFS curricula, and private advisory services through contract farming and input supply sales).
- Sub-activity 1.1.2.3: Conduct annual training of extension officers from the Provincial Department of Agriculture, Forestry and Fisheries (PDAFF), Provincial Department of Water Resources and Meteorology (PDoWRAM), Provincial Department of Enviornment (PDoE), Provincial Department of Commerce (PDoC) , Provincial Committee for Desaster Management (PCDM) and district administration, commune and village extension agents, and private extension providers, including NGOs on the SOPs.

Activity 1.1.3: Increase awareness of agrometeorological advisory services and the benefits of the application in farm management and value addition activities to support decision-making and reduce smallholder farmers and other local value chain actors' vulnerabilities to climate change, particularly women farmers and value chain actors.

Description: Increased awareness of available services and their application among smallholder farmers and other local value chain actors will effectively reduce their climate vulnerabilities in agricultural production and processing. Increased service demand and user feedback will also create an enabling environment for progressively improving service quality and options.

- Sub-activity 1.1.3.1: Prepare and roll out training of trainer (TOT) curricula through FFS to raise awareness of advisory services and promote the application of agrometeorological advisory services among smallholder farmers and other local value chain actors.
- Sub-activity 1.1.3.2: Support peer-to-peer knowledge sharing and training to further promote advisory services among other members of targeted ACs, FAs, PGs, CPAs, CFs, and agricultural unions with their respective TOT-trained representatives.

EXPECTED OUTCOME TWO: ADAPTIVE CAPACITY OF SMALLHOLDER FARMERS AND OTHER LOCAL VALUE CHAIN ACTORS, PARTICULARLY VULNERABLE WOMEN FARMERS, IS INCREASED THROUGH MARKET INCENTIVES THAT PROMOTE CLIMATE-RESILIENT, HIGHER-VALUE, DIVERSIFIED, AND SUSTAINABLE PRODUCTION AND PROCESSING.

83 This component is delivered through four distinct but interdependent Outputs – 2.1. Increased premium market access through agricultural certification programs; 2.2. Increased access to climate-resilient and high-value technologies; 2.3. Demonstration and promotion of climate-resilient, high-value and sustainable agricultural practices and technologies; and 2.4. Improved agroecological functions at the landscape level.

84 This outcome will target approximately 124 ACs, FAs, PGs, CPAs, CFs, and agricultural unions, translating to roughly 24,000 farmers and other local value chain actors involved in the target value chains over the project lifetime. The selection of the CPAs and CFs based on specific catchment restoration and protection criteria is presented under Output 2.4 and Annex 2. The selection of the ACs, FAs, PGs, and agricultural unions will be finalized at the project's inception based on criteria, including their ambition and potential to adopt climate-resilient and higher-value practices and a moderate risk appetite for exploring new market opportunities. The project formulation team has identified and consulted several candidate beneficiary groups extensively during the formulation process (see Annex 7) as they have demonstrated the potential to champion the outcome and specific outputs. Others will be identified at the inception phase to ensure the selection of appropriate and timely beneficiary groups, particularly considering the fast evolving nature of practice and market trends and other socioeconomic factors in the NTSB.

85 In addition, a total of nearly 1,000 public and private extension service providers, including NGOs, will be trained, and a total of 1,200 local retailers, hoteliers, restauranteurs, and traders/exporters will be engaged to support the delivery of this outcome (see Section E.5 for more details). The outcome will be implemented under the joint leadership of MAFF and MoE with technical support from FAO Cambodia (see Table 11 for more details) and NGO partners (potential NGO partners include GRET, Wildlife Conservation Society (WCS) and Institute for research and application of development methods (IRAM) – see Section B.4). The AE will identify and select specific NGO partners among these

potential partners through a competitive procurement process. The procured NGO partners will provide the project and intended beneficiaries with specific services. Such services include providing technical support to ACs, FAs, PGs, CPAs, and CFs, and agricultural unions to develop their business plans and designing relevant training materials. Their selection will be based on their proven areas of expertise and experience that are crucial for the project's success.

Output 2.1: Premium market access opportunities for cashew, mango, organic rice, and vegetable producers and processors increased through climate-resilient and high-value certification programs.

86 The baseline and feasibility studies by IRAM (2018) and ICEM (2020) on agricultural certification programs and climate-resilient value chains identified and examined the economic, social, and ecological opportunities and challenges associated with the high-value crops and their value chains. Informed by these studies (Annex 2) and a series of stakeholder consultations (Annex 7), the project targets four crops 1) Rice in Preah Vihear; 2) Mango in Oddar Meanchey; 3) Cashew in Kampong Thom and Preah Vihear, and 4) leafy vegetables in Siem Reap as vehicles for promoting climate-resilient and sustainable agriculture through certification programs in the NTSB. As stated earlier, these comprise several of the country's priority crops identified by the MAFF (2019).

87 The agricultural certification programs that were examined in these studies include Geographical Indications (GIs), Organic Certification, Cambodia Good Agricultural Practices (CamGAP), Hazard Analysis Critical Control Point (HACCP), and ISO 22000. However, given the rapidly evolving nature of market trends, the selection of particular certifications, employed under this output, will be made at the project inception based on a crop-specific strategy development process, including a market suitability analysis. Additional certifications may be considered at that stage.

88 **Rice production in Preah Vihear** remains relatively traditional, which has enabled the development of a significant organic rice sector mainly through the PMUAC, which supports 26 ACs (more than 4,000 farmers). A sizable production mechanism and supply chain has been established through various efforts in the province. Organic rice through the PMUAC is EU and USA/NOP certified. In 2017, the PMUAC delivered more than 10,800 tons of organic rice to two buyers - AMRU-Rice and SoA, leading organic rice buyers. The PEARL project will further support the PMUAC in expanding this organic rice production capacity.

89 Contract farming has proven itself to be an effective tool for farmers and buyers, given the traceability and quality control requirements. Although contract farming can expose farmers to many risks, it can also ensure a favorable environment for both farmers and contract providers, like AMRU-Rice, when an intermediary like the PMUAC is involved. For the contract provider, it makes quality control more manageable. For the farmers, contract farming guarantees their access to a premium price market while the intermediary like the PMUAC increases their collective bargaining power to negotiate favorable contract terms and prices. The project will thus scale up this modality and support the establishment and capacity strengthening of crop-specific unions to promote this win-win scenario through PSPPs.

90 Among several certification options, GI offers a unique opportunity for organic rice production in Preah Vihear, where the potential for expanding its organic rice production capacity is somewhat limited, to increase their premium earning capacity. The process to develop an GI product must also include an adequate level of market development efforts and investment, based on the lessons learned from other GI development in the country. The PEARL project could expect to achieve 1,000 ha of GI-certified rice production, with even more expansion potential. The project will ensure that this expansion in production capacity does not lead to further agricultural expansion to cause deforestation or land degradation. The project will increase production through increased productivity and expanding the number of farmers producing organic rice based on market incentives and capacity support.

91 **Cashew in Kampong Thom and some parts of Preah Vihear:** Due to the growing regional demand, particularly from Viet Nam, and favorable prices, cashew production is currently booming in Cambodia. Kampong Thom is the leading producer of cashew in the country. The total cashew production area in the province was 54,609 ha (20% of the national total) in 2019, and the production area in Kampong Thom had more than quadrupled between 2013 and 2019 (NIS, 2019).

92 Most Kampong Thom and Preah Vihear farmers cultivate M23 (80% in Kampong Thom). The so-called "local varieties" are also grown (more common in Preah Vihear). The local varieties are being rapidly replaced by M23 (to a lesser degree, H09, M10, and M04) because it gives a higher yield, between 1 to 2 metric tons of raw cashew nuts (RCNs)/ha, compared to 700 kg/ha with the traditional varieties. M23 and other new varieties, although presenting a higher yield, are more susceptible to diseases and insect pests. The incidence of pest and diseases is rising due to prolonged droughts and increased temperatures. The cultivation of this variety thus often goes hand in hand with an

intensification of production methods and increased use of chemical inputs, suggesting the need for increased efforts in IPM.

93 Despite the recent market expansion, cashew production in Cambodia is not geared towards value addition through processing and certification. Cambodia remains a raw material producer for Viet Nam. Also, contract farming is not common. Most cashew farmers often sell their harvests to collectors on a first-come-first-served basis. Most collectors/ middlemen are not concerned with the product quality. This practice keeps both the quality and value of RCN low.

94 Value-addition processing and packaging present a viable avenue for increasing the value of cashew production and income of cashew farmers while noting the importance of market development in parallel. While GI is not suitable due to the lack of evidence of geographical uniqueness, CamGAP offers some potential for promoting high-value and climate-resilient production when combined with marketing efforts internationally and domestically in major tourist destinations. There is a potential for organic cashew production in some parts of Preah Vihear and Kampong Thom, where organic rice production is practiced. However, increased pesticide and herbicide use, in general, poses a challenge to organic conversion while there is a strong demand for certified organic cashew kernels internationally (IFC, 2010). Local SMEs, including Sambo Cashew and Kosal Farm, are leaders in delivering near organic and value-added cashew products. The project will work closely with these companies to join the efforts and resources.

95 **Mango production in Oddar Meanchey** has been expanding rapidly due to high prices of mangoes with increasing demand from China, Thailand, Viet Nam, and others. Mango production in Oddar Meanchey is split between comparatively large and financially well-resourced plantations and smallholder farmers who lack the resources necessary to improve their adaptive capacities. In 2017, there was more than 7,000 hectares of mango orchards in the province, with only approximately 3,000 hectares already productive, according to PDAFF. The production capacity was estimated to more than triple in the next five years (Burn et al., 2018).

96 The most prevalent variety of mango under cultivation in the province is Kaev Lmiet, which is in high demand domestically and regionally (i.e., Thailand and Viet Nam). The natural fruiting season is March-April, and Paclobutrazol is widely used to induce out-of-season flowering. It is common in the province to have two harvests, with the first occurring in February-March and the second in October-November.

97 Most mango producers in Oddar Meanchey are not currently organized into legally recognized cooperatives, although the prevalence of cooperatives is growing. Smallholder mango farmers in the province typically sell their mangoes to either Cambodian traders/exporters or local middlemen, some of whom come from Thailand. Mangoes that cross into Thailand are often processed and sold as Thai products. There is almost no commercial mango processing capacity in the province. With minimal extension support, many mango orchards are managed with chemical inputs, including fertilizers, insecticides, florigen, and glyphosate, without proper instructions and guidelines.

98 GAP certification of mango in Oddar Meanchey has the potential to reduce production costs by cutting down the excessive use of pesticides, improve food safety and organoleptic quality of the fruits, and improve farmer health by reducing exposure to chemicals. This is consistent with the overall GAP certification trend in the country. Quality-focused mango traders/exporters, such as Seasons Fresh, actively support mango farmers' adoption of CamGap in other provinces. The project will work closely with these private partners to promote higher practice standards. These efforts should also be combined with HACCP and ISO 22000 to improve handling, processing, and packaging capacities as a value addition strategy.

99 Oddar Meanchey is among the driest and most drought-prone areas of Cambodia. Although heat stress can have severe negative impacts on mango, the trees are remarkably resilient to the effects of extreme heat and drought, making them comparatively climate-resilient compared to other crops. These geographical and climatic conditions also give Oddar Meanchey mangos a distinct flavor; therefore, GI registration should be considered a potential goal in the future.

100 Planting mango and cashew trees on fields previously used for annual crops such as cassava will have an emissions removal impact. The PEARL project will also prevent the expansion of these orchards into existing forests.

101 **Leafy vegetable production in Siem Reap** is vital for farmers, particularly smallholders and female farmers, due to increased labor migration and in terms of income and nutrition. Vegetable growers are very diverse in scale, production, available resources, and needs, with most farms being small-scale and rainfed (Duong and Khin, 2016). The main leafy vegetable crops farmed are Chinese kale and lettuce, and others include green garlic, cabbage, trakun, and amaranth (NIS, 2019).

102 The beginning of the dry season is the most favorable time for vegetable production, but due to the high water needs of leafy vegetables such as cabbage, production is limited by water availability towards the end of the dry season. Other factors such as floods and warmer temperatures decrease vegetable yields during the rainy season. Due to these limitations, local vegetable production is insufficient to meet domestic demand at the beginning of the dry season and during the rainy season.

103 Being one of the most established tourist destinations in the country, there are many opportunities locally for vegetable farmers to sell their products to hotels and restaurants and at markets. Leafy vegetable production in Siem Reap is primarily for the Siem Reap and Phnom Penh consumers. Most vegetable farmers (90%) are not part of a cooperative. Most vertical linkages are informal, but the use of formal contracts is increasing. The return to labor is estimated to be about twice that of wet-season rice; thus, vegetables provide a reasonable opportunity for diversifying incomes. However, production is highly seasonal, and no policy has been put into place yet to address the main constraints of the sector, including water shortages, inadequate extension services, and limited access to finance and technologies.

104 There are some model farms and farmer associations in the area. One such example is the Eco Farm Group, supporting smallholder farmers, particularly women, in near organic production by adopting CamGap and other quality control measures through extension support and market access with strategic support from an NGO, GRET. There is an opportunity to replicate the Eco Farm model to promote and scale-up high-value extension and market access support through quality assurance and climate-resilient technologies and practices, particularly for female-headed households with limited labor and time availability.

105 **Market characteristics of certification programs**: Supporting value chains through the certification of agricultural products requires targeted efforts that are unique to each certification program. One crucial aspect of such efforts is marketing and promotion and consumer awareness-raising. Each certification scheme presents unique market characteristics and; therefore, requires an understanding of specific needs for marketing and promotion. The analysis of the prominent certification programs is provided in Annex 2, which describes different ways in which the PEARL project may engage with these certification programs for the development of market-based instruments to promote climate-resilient and sustainable agricultural practices through a value chain approach.

Activities under Output 2.1. (See Section E.6.)

106 Building on these crop-specific and certification opportunities in each province, the project will first form an inter-value chain committee to develop a roadmap at the provincial level to match the target crop with the most timely and relevant certification(s) for promoting high-value and climate-resilient agriculture. Based on the roadmap, the project will support ACs, FAs, PGs, CPAs, CFs, and agricultural unions in developing and implementing crop-specific and climate-resilient business plans. For CPAs and CFs, particular attention will be given to deforestation-free value chain development during the roadmap and business plan preparation. The roadmaps and business plans will focus on specific market opportunities and relevant strengths of local value chain actors while addressing crop-specific climate risks, identified through Output 1.1., by incorporating climate-resilient technologies and techniques demonstrated and promoted under Output 2.3. This will be combined with training beneficiary farmers and other local value chain actors to develop their financial and business literacy and entrepreneurial skills (with particular focus on youth, women, and other socially excluded minorities) and extension providers to support the roadmap and business plans implementation. The project will also build direct partnerships with champion SMEs and traders/exporters to expedite the transformation process. Also, add-on guidelines and tools will be developed to ensure that the chosen certifications consider climate risks and impacts adequately.

Activities, Descriptions and Sub-Activities
Activity 2.1.1: Develop and operationalize inter-value-chain-actors roadmaps at the provincial level and action/business plans for climate-resilient, inclusive and gender-responsive premium value chain development and identify specific certification programs as key vehicles. **Description:** Inclusive and gender-responsive value chain development roadmaps, linking various value chain actors, will establish strategic directions at the provincial level for supporting ACs, FAs, PGs, CPAs, CFs, and agricultural unions in adopting climate-resilient, high-value and sustainable agriculture. Each roadmap will assess and identify appropriate certification programs as essential vehicles for accessing premium price markets. ACs, FAs, PGs, CPAs, CFs, and agricultural unions in the target districts will prepare their crop-specific action/business plans, guided by their district roadmaps to increase market access. Their business plans will feed into Activity 2.2.1.

- Sub-activity 2.1.1.1: Establish an inter-value-chain committee to prepare provincial-level roadmaps to identify a target certification program(s) *(e.g., CamGap, PGS, GI, SRP and organic for production, and ISO 2200 and HACCP for processing)* for climate-resilient and high-value value chain development.
- Sub-activity 2.1.1.2: Operationalize the roadmaps by establishing institutional arrangements, product specifications, quality control mechanisms for the selected certification schemes and marketing tools, ensuring legal registration, and conducting training.
- Sub-activity 2.1.1.3: Support the provincial-level Inter-value-chain committees with focus on ACs, FAs, PGs, CFs, and agricultural unions to carry out branding, marketing (e.g., attending trade fairs, consumer awareness raising, and brokering purchase agreements) and sourcing and quality control activities.
- Sub-activity 2.1.1.4: Support the provincial-level Inter-value-chain committees with focus on CPAs to carry out branding, marketing and sourcing and quality control activities.
- Sub-activity 2.1.1.5: Conduct annual training of extension providers at the provincial level to operationalize the roadmaps to roll out the roadmaps through FFS curricula and other support programs for smallholder farmers and other local value chain actors.
- Sub-activity 2.1.1.6: Assist 78 ACs, FAs, PGs, including up to 2 agricultural unions in preparing crop-specific action plans/business plans to operationalize the provincial-level roadmaps.
- Sub-activity 2.1.1.7: Assist 30 ACs, FAs, and PGs and 4 CFs in preparing crop-specific action plans/business plans to operationalize the provincial-level roadmaps.
- Sub-activity 2.1.1.8: Assist 16 CPAs in preparing crop-specific action plans/business plans to operationalize the provincial-level roadmaps.
- Sub-activity 2.1.1.9: Assist ACs, FAs, PGs, CPAs, CFs in forming crop-specific agricultural unions, where appropriate and strategic, to leverage pooled resources and capacities through action and business planning processes.
- Sub-activity 2.1.1.10: Organize national and provincial annual dialogues between the beneficiary bodies (i.e., ACs, FAs, PGs, CPAs, CFs, and agricultural unions) and direct purchase agreement providers (i.e., traders/exporters, retailers, hoteliers, and restauranteurs) to establish operational partnerships for market development and implementing crop-specific action/business plans.

Activity 2.1.2: Develop voluntary add-on supplementary guidelines, tools, and training materials to consider specific climate risks, mitigation impact and strategies for the certification programs identified under Activity 2.1.1. (e.g., CamGap, GI and organic for production, and ISO 2200 and HACCP for processing) for the target value chains (linking to Activity 3.1.1. on PLR and institutional arrangements concerning these certification programs).

Description: Climate-proofing of the agricultural certification programs identified in the provincial roadmaps will be crucial for harnessing their market potential for assisting smallholder farmers and other local value chain actors in adopting climate-resilient, high-value, and sustainable agriculture and livelihoods.

- Sub-activity 2.1.2.1: Establish a multistakeholder TWG for the certification programs identified in the provincial roadmaps to review and update/develop relevant supplementary guidelines, training materials, and tools to consider climate-related risks, climate-resilient approaches, and interventions.
- Sub-activity 2.1.2.2: Prepare and implement training programs for regulatory and independent verification bodies.
- Sub-activity 2.1.2.3: Prepare and implement TOT programs for public and private extension providers, including NGOs and representatives of ACs, FAs, PGs, CPAs, CFs, and agricultural unions to operationalize the supplementary guidelines, training materials, and tools.
- Sub-activity 2.1.2.4: Explore the possibility of adopting and operationalizing W+ Standards to empower women farmers, particularly in the vegetable sector.

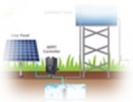
Output 2.2: Access to technologies for climate-resilient agriculture and value chain development improved among smallholder farmers and other local value chain actors, particularly women farmers and value chain actors.

107 The lack of agricultural infrastructure and value addition capacity in the region results in a substantial loss of opportunity for farmers and other local value chain actors, including millers and traders, hence limiting local employment and business development options. For instance, because of their lack of proper postharvest storage and processing capacities, many farmers take the first price offer by market collectors in fear of being unable to sell all their harvest in the markets. These practices keep their agricultural production low quality and low value, thus limiting their long-term business development adaptation capabilities and capacities. Compounding these baseline conditions, limited access to services and information creates a lack of awareness and understanding of market trends and opportunities. Limited knowledge and outdated production and processing practices and technologies result in significant crop and value losses. One such example is the observed trend toward increased use of chemical pesticides without proper knowledge of effective application methods to address higher levels of climate change induced plant pest and diseases, which in turn limits their market access. Therefore, removing production and processing technological and infrastructural capability and capacity barriers are crucial in assisting smallholder farmers and other local value chain actors in transitioning towards climate-resilient and sustainable agriculture practices.

108 To do so, the PEARL project will establish a climate adaptation asset acquisition mechanism, the Farmer-led Agricultural Resilience Mechanism (FARM), to assist farmer associations (registered businesses) and other small-scale local value chain actors who would otherwise not have access to the necessary finance to adopt climate-resilient and market competitive practices and technologies, as they lack the collateral required. Accelerated technological improvements by farmer associations and other small-scale local value chain actors are also expected to benefit the private sector by increasing the quality and quantity of supply capacity and services and public sector spending in related enabling conditions.

109 The FARM will support up to 124 legally registered agricultural unions, ACs, FAs, and PGs, including CPAs and CFs, in the NTSB, for procuring the technologies and infrastructure assets essential to implementing their crop-specific and climate-resilient business plans developed under Output 2.1 to transition to climate-resilient and higher-value agriculture production and processing. The FARM will also ensure that such technologies and assets will be chosen using gender-responsive, inclusive and equitable processes and will include operation and maintenance plans and insurance services to ensure the sustainable life of the assets. Such targeted technologies and infrastructure include solar-powered cold storage facilities, pack house, smart high efficiency irrigation systems, and energy-efficient value-added processing facilities (examples provided in Table 7), as identified in the beneficiary groups' business plans. The selection criteria for beneficiary groups include 1) Financial management capacity (e.g., membership-based savings and credit ratings), 2) Capacity to govern inclusively, gender-responsively, and equitably (e.g., governance arrangements), and 3) Viability and impact potential of their business plans.

Table 7: Examples of Technologies and Infrastructure Assets

Example Asset	Basic Asset Specifications	Pricing (USD)	Note
 Solar Water Pump	• 190W x 15 solar panels • Motor 3 HP • 5 kW Water pump inverter • Wires and other accessories • 60-80 m^3 flow capacity	15,000 – 20,000	Multiple unites are required by each beneficiary group
 Drip Irrigation System	• Same system as above • Drip lines (USD 500 per ha) • Automated timer	40,000 -45,000 for 50 hectare cropland	
 Solar Cold Storage Room for mango and vegetables	• 5 kW solar capacity • 1.5- 2.7 refrigerant capacity • Humidity control range 65-95% • Temperature range of 4 - 10˚ C .	15,000 – 25,000	Multiple unites are required by each beneficiary group
 Juice processing machine for reducing postharvest loss and value addition	• 3-5 t/hr. processing capacity • 1- 30 kW power output • High energy efficiency rating	100,000 -120,000	Multiple beneficiary groups may jointly own and share one unit.
 Laser land leveler to improve fertilizer and water use efficiency and increase production capacity.	• Fuel efficient 80 HP tractor • Trimble laser levelling unit • External hydraulic pump and oil cooler	45,000 – 50,000	

110 The FARM builds on best practices and lessons learned through the past and ongoing initiatives in the sector (see Annex 2 for the list of baseline investment projects). One of such initiatives is the Tonle Sap Poverty Reduction and Smallholder Development Project (TSSD)[13], implemented by the ADB and IFAD. The project supports ID Poor farmers in improving their livelihood options. The project established and has assisted more than 1,000 small groups of ID Poor farmers in establishing membership-based savings schemes through commercial banks to provide individual members with access to a line of credit backed by a group guarantee system. This mechanism has successfully increased financial and technological access, the entrepreneurial spirit, and a sense of ownership of livelihood improvement actions among the beneficiaries, while the social support network has notably reduced default payments and business failure risks. Box 1 provides a brief description of the TSSD and its lessons that have informed the design of the FARM. A more detailed description of the TSSD's experience is provided in Annex 2.

[13] https://www.tssdcambodia.org

Box 1: Revolving Fund Experience of Tonle Sap Poverty Reduction and Smallholder Development (TSSD)

Target beneficiaries:

- ID poor farmers in 7 provinces, including Kampong Thom and Preah Vihear.
- Initially designed for rice and vegetable production; however, almost two-thirds of the beneficiaries use the funds for chick/chicken raising (poultry) instead as it offers quick income generation opportunities.

Target beneficiary unit:

- Livelihood Improvement Groups (LIGs) - Each LIG comprises 20 to 25 ID poor members.

Coverage:

- 1st phase (2010-17):196 communes and 27 districts supported, and 1,241 Livelihood Improvement Groups (LIGs) established.
- 2nd phase (2018 -2022): 270 communes supported, and a total of 2,000 LIGs, including LIGs from the first phase, operational.

Initial capital investment:

- US$ 7 million (loan)

Intermediary for fiduciary control:

- Commune Councils receive funds through NCDD into dedicated accounts and manage fund disbursements and repayments from LIGs.

Fund Access:

- An individual member of a LIG is eligible to borrow up to US$ 240 at a time.
- An applicant must develop a business plan, including a repayment plan.
- LIGs provide group support to their members through peer-to-peer (P2P) learning and assistance.
- TSSD provides capacity development support to LIGs and their members and assists in establishing individual bank accounts to receive funds.
- Initial investment grew to US$ 10 million (2021).

Repayments:

- Repayment durations are determined based on income cycles (e.g., for rice, six months, nine months for handicrafts).
- 50% of the interest collected paid back to LIGs to establish group savings accounts.

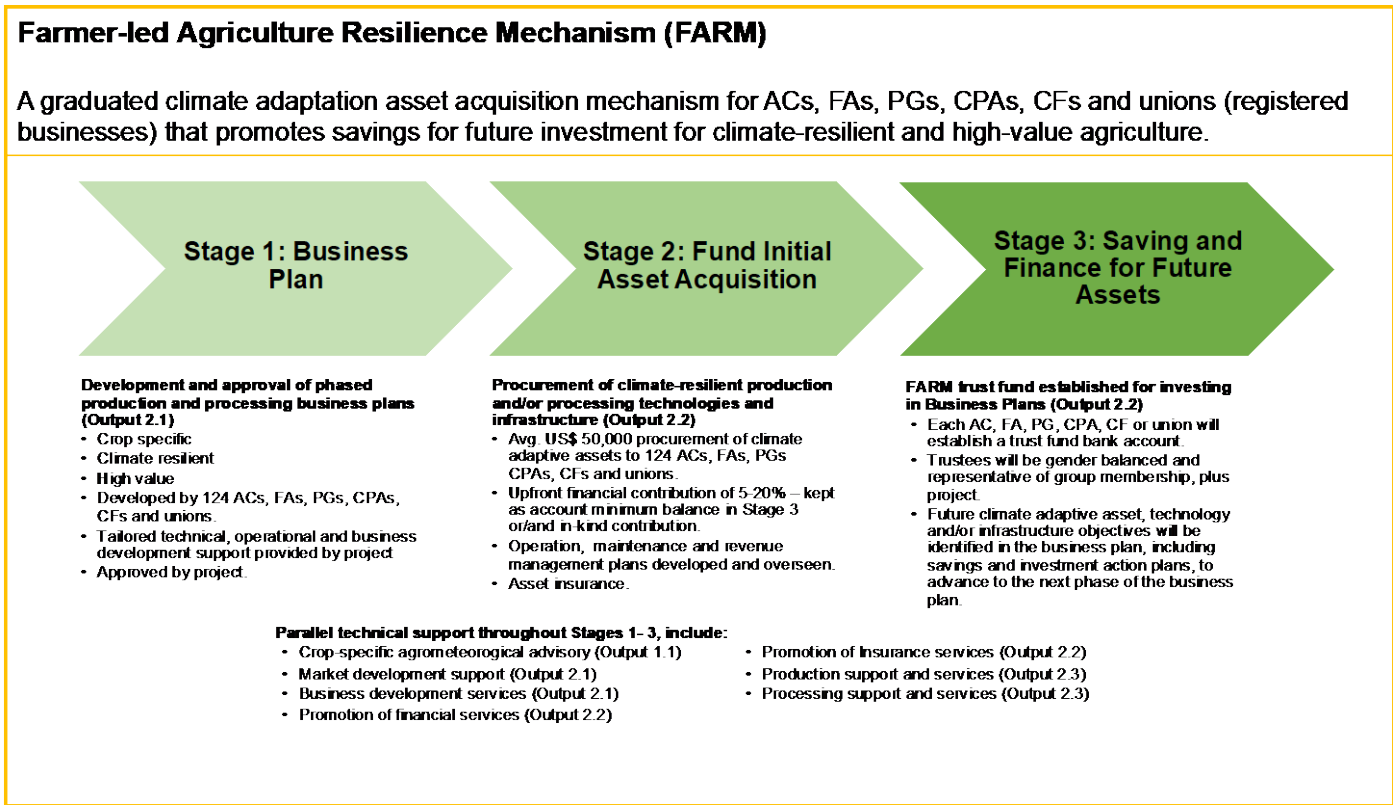
Key lessons learned:

- P2P efforts (e.g., literate members supporting others through business planning and bookkeeping) within each LIG created solid social cohesion among members, resulting in an effective group guarantee system and lowering the default risk.
- Use of ICT was crucial for successful implementation: All transactions are done through mobile apps – bank branches are often not nearby.
- LIG group savings were not initially pursued but should have been done from the start - the total available finance for the LIGs would have been much more significant. This is highly recommended.

Activities under Output 2.2. (See Section E.6.)

111 The FARM will be implemented in three stages as a graduation programme (see Figure 9). Beneficiary groups will be required to successfully complete the activities of each stage in order to graduate to the next stage of the programme. The **first stage** begins under Output 2.1 to develop crop-specific and climate-resilient production and processing business plans with the beneficiary groups. The project will also ensure that the business plans complement relevant Commune Development and Investment Plans (CDPs and CIPs) to contribute to climate resilience building at the local level. The project will provide various technical and operational agriculture value chain and business development support services to the beneficiary groups during this stage. Each business plan will include growth strategies using a phased approach, an assessment of resource needs, asset acquisition, and revenue management plans, which includes access to private financial capital and insurance services. The project will set up a business plan review committee whose members will be FAO, MAFF, MoE, agricultural extension services, and private value chain leaders. The committee will establish specific review criteria to screen and approve business plans to ensure their climate adaptation benefits, business viability, quality control measures (see Table 8) and commune and district -level sustainable development contribution (e.g., youth employment, green jobs).

Figure 9: FARM Stages



112 In the **second stage**, following the completion and acceptance of the business plans, the project, in consultation with each beneficiary group, will identify a technology(ies) or/and infrastructure asset(s) that is/are essential for operationalizing the initial phase of their business plan. The project will develop standardized technical specifications for the proposed asset(s) and select vendors and procure the chosen technology (ies)/infrastructure asset(s) for the beneficiary group. At this point, each beneficiary group will be encouraged to make an upfront financial contribution (e.g., between 5 to 20 % of the total value) towards the purchase. This contribution could take the form of voluntary financial contributions to their respective trust fund accounts established during Stage 3 of FARM as well as in-kind, non-financial contributions (e.g. labor for site preparation). The beneficiary group may provide a non-financial contribution (e.g., labor hours) during the installation of the acquired infrastructure asset(s). The upfront financial contribution towards the purchase of the asset(s) will be used as start-up funds in the beneficiary group's trust fund account (see Stage 3) and held as a minimum balance until the completion of the full handover schedule or project completion. The level of minimum fund balance to facilitate the initial financial contribution will be negotiated taking into account the conditions and business plan of each beneficiary group and included in the terms of establishment of the fund with the selected financial service provider. Although the project will transfer the ownership[14] of the procured asset(s) to the beneficiary group immediately upon the attainment of technical installation clearance, the project will withhold[15] ownership documents and prepare a full handover schedule to prevent any fraudulent activities or illegal disposition of the asset(s) not according to the business plan. The beneficiary group will assume the full duty of care upon completion of ownership transfer. The project will also support the beneficiary group in preparing and implementing an asset maintenance plan for keeping the asset(s) in optimal operating conditions. The beneficiary group will also be required to purchase an insurance policy for the asset(s) against the total loss or damage.

Table 8: FARM Quality Control Measures

Stage 1: Business Plan	Stage 2: Fund Initial Asset Acquisition	Stage 3: Saving and Finance for Future Assets

[14] FAO's Manual Section 503 on Asset Management, including sub-sections on asset disposal and transfer to financial beneficiaries, will guide beneficiary selection, legal agreement, and asset transfer processes and procedures to prevent fraudulent and illegal practices, including money-laundering and terrorist financing.

[15] FAO, as the AE, will undertake this responsibility.

Each Business plan, assessed by Review Committee, includes:	***QC instruments for asset acquisition and transfer include:***	***Terms and arrangements of Trust Fund accounts include:***
• Phased business graduation strategy and action plan, including revenue forecasts and management (e.g., set in 3 phases) • Asset acquisition plan, including technology and infrastructure needs and specifications for each phase. • Technical and financial monitoring plans and reporting procedures. • In-kind or/and upfront financial contribution commitment and its use (i.e., a minimum account balance in Stage 3). • Terms and conditions of asset transfer and full handover. • Asset maintenance and operation plans, including insurance (through fees and revenues). • Regular financial contribution level and schedule based on revenue forecasts and management plan, financial capacity, harvest cycle, etc. • Governance arrangements (i.e., a gender-balanced board of trustees, gender-responsive decision-making procedures, a dispute resolution mechanism, disbursement monitoring and reporting responsibilities, and post-project arrangements).	• FARM grants manual (developed at inception). • FAO's internationally competitive procurement standards and procedures. • Grant agreement, including upfront in-kind (e.g., labor hours) or/and financial contribution commitment and arrangements. • Asset transfer agreement, including withholding legal documents to prevent any fraudulent activities or disposition of the asset(s) not in line with business plans and full handover terms and schedule.	• List of project's recommended microfinance banks and service packages for beneficiary groups. • Trust account per beneficiary group (124 accounts in total) using a standard trust account package of commercial banks (e.g., ACLEDA, AMK). • Upfront financial contribution used as a minimum balance until full handover/project completion. • Expected regular contribution of average US$ 5,000 (ca. US $33 per individual member) annually guided by the business plans – specific schedule TBD based on harvest cycles, etc. • Sources of regular contribution include membership fees and revenues from business plan implementation. • Estimated banking fees – US$ 50 a year for up to US$ 50,000 in deposit, plus transaction fees. • Board of trustees per account – the trustees, including the project, consult with members to make disbursement decisions executed by the bank. • Customized disbursement/withdrawal criteria per account (primarily for business plan advancement). • Biannual business plan progress reporting by each beneficiary group (financial and technical), including board meeting minutes and bank statements.

113 Each beneficiary group will develop and cover the cost of maintenance and operation plan and insurance through their membership fees[16] or/and revenues generated through the implementation of its business plan. As part of its asset acquisition plan, the project will support the beneficiary groups in making regular financial contributions for the use of the assets(s) (e.g., a proportion of the revenues generated through their business plan implementation) to increase the sense of ownership of their acquired asset(s) and business plans. The financial contribution schedule will be prepared based on crop-specific harvest cycles (e.g., biannual, annual), the business activities of the beneficiary group and the financial ability of each beneficiary group. Based on the financial scenarios provided in Annex 2, the project expects each beneficiary group to be able to make a regular contribution of approximately US$5,000 annually or based on an alternative contribution schedule, as described above. This figure is estimated based on a standard loan principal repayment level with the MFIs in Cambodia and the project financial impact of the project demonstrated in Annex 3. For instance, an average beneficiary group comprises 150 members, which equates to US$33 per member annually to make the annual contribution. The project expects to contribute to a yearly household income increase of US$200-300 (Annex 3), and this estimated individual contribution level is considered feasible. However, any higher contribution or financial commitment level would make the mechanism unviable for the beneficiary groups as it would further reduce the already marginal household income increase delivered by the project. Directing the increased household income as much as possible to enhance the individual beneficiaries' adaptive capacity is the primary objective during this business incubation period. In the post-project environment, these beneficiary groups will have developed the adequate financial ability to access finance at a much lower level of concessionality.

114 In parallel, the project will provide ongoing technical support to the beneficiary groups in implementing their business plans, including demonstrating and supporting the adoption of relevant climate-resilient and high-value practices and technology applications under Output 2.3.

115 The GCF resources (roughly US$ 7 million) will be used as initial funding for the procurement of the technologies and infrastructure assets and to support the establishment of the FARM. According to the conservative estimate from the feasibility study (see Annex 2 for the detailed calculation), the initial funding will generate roughly US$ 20 million over the project life to finance a range of activities by the beneficiary groups for their transition to climate-resilient and high-value agriculture. However, much of these activities will focus on capacity development efforts related to the operationalization of the business plans on a trial-and-error basis; therefore, a high level of concessionality through GCF finance is required to support this incubation process during which the revenue generation potential remains relatively low.

116 In the **third stage**, the project will assist[17] each beneficiary group in establishing a trust fund account with a local commercial microfinance bank (e.g., ACLEDA, AMK – see Table 5). The account will be established using a commercial

banking product with standard services. Most commercial microfinance banks in Cambodia offer a trust account service, which charges US$ 50 for an annual service fee for an account holding up to US$ 50,000 and requires a board of trustees and customized transaction criteria. The project will support beneficiary groups to match with the most appropriate finance institution to establish the trust fund account. A minimum requirement for selecting a finance institution is compliance with the Cambodian financial sector regulation including directives on capital buffers (2018) and liquidity risk management (2017) as well as the new Banking and Financial Institutions' Code of Conduct (2022). The beneficiary group will then place their financial contributions for the acquired asset(s) in the trust fund. A board of trustees, comprising of beneficiary group members (gender balanced) will be established to oversee fund disbursements/transactions. The trustees include the project for quality assurance, and the project will support the board in developing post-project governance arrangements. The disbursements [18] will be used to advance the implementation of the beneficiary group's business plan (e.g., completing the initial phase and initiating the second phase with clear action plans and graduation strategies). Disbursement decisions will be monitored and advice provided by the PEARL project, to ensure that the disbursements will directly support climate change adaptation and related efforts and that gender responsiveness, and equity considerations are assured. The project working with the beneficiary groups will establish customized disbursement criteria for each beneficiary group based on its specific needs and actions identified under its business plan. See Table 8 for specific quality control measures for each stage, and also Figure 12 in Section B.4 shows the operational arrangements of the FARM.

117 Concurrently, the project will provide governance capacity development support to the beneficiary groups through establishing and training boards of trustees and beneficiary group members to ensure risk-free and inclusive decision-making, transparency, and accountability. The project will also increase the beneficiary groups' awareness of financial products and services (e.g., savings, investments, and loans) and risk financing (i.e., insurance) available in the country that would be complementary to the FARM to advance the implementation of their business plans. The beneficiary groups may use the acquired assets and trust fund accounts as group collateral to access such products and services. This overall expansion of financial access underscores the fundamental rationale for the FARM: it strategically bundles technical and financial assistance to ultimately de-risk and lower the cost of lending and borrowing, insurance, and public and private investment for the climate change adaptation of smallholder farmers and other small-scale local value chain actors.

118 In addition, the PEARL project will work with the National Agricultural Insurance Program, led by MAFF in partnership with the country's leading insurance providers (e.g., Forte Insurance), to explore additional risk insurance options, particularly for cashew, mango, and vegetable producers and related local value chain actors. They currently do not have many opportunities to protect themselves from perils. The National Agricultural Insurance Program intends to make subsidized insurance available for farmers to reduce the overall impact of climate change-related agricultural and livelihood loss and damage. In this context, private sector partners have few financial incentives to invest in research and development (e.g., prototype development); therefore, a high level of concessionality through GCF finance is also required in this effort. During the project design phase, consultations with private insurance providers and the National Agricultural Insurance Programme identified a critical capacity gap. Without the project intervention to support risk profiling of these crops to establish the baseline information for the insurance providers to lower the cost of insurance product development, especially for the perennial crops, insurance options for producers of these crops would remain limited. The project will thus develop and pilot prototype products under the overall framework of the National Agricultural Insurance Program. The project's specific outputs will be directly owned and managed by MAFF under the National Agricultural Insurance Program. Furthermore, the project will increase the beneficiaries' awareness of the available financial support products to improve their financial access.

Activities, Descriptions and Sub-Activities
Activity 2.2.1: Establish a Farmer-led Agricultural Resilience Mechanism (FARM), for ACs, FAs, PGs, CPAs, CFs, and agricultural unions to assist their members' transition to climate-resilient and high-value agriculture in an inclusive and gender-responsive manner.

[16] Most beneficiary groups have an established mechanism to collect membership fees from their members regularly for a group savings scheme or/and to cover operating costs. The project will support each beneficiary group in identifying ways to cover the cost of insuring and maintaining the acquired asset. One such way is to agree among its members to increase their membership fee contribution level.

[17] The project will work with each beneficiary group to identify the most suitable commercial bank to set up its trust fund account. The process will consider factors such as their physical accessibility, the beneficiary group's previous and existing business relationship and experience with the bank, and product and service competitiveness. As part of the screening process for identifying private partners, FAO, as the AE, will also screen several large agricultural microfinance banks to identify a list of recommended banks. The project will also assist each beneficiary group in selecting an appropriate service package (i.e., trust fund arrangements) with the identified bank. The beneficiary group will be responsible for opening the trust fund account.

[18] Disbursements will finance various activities, including purchasing additional equipment and agricultural supplies and quality control-related activities identified in the business plan.

Description: An innovative climate adaptation asset acquisition mechanism, FARM, will be established to support the operationalization of the action plans/business plans developed by a total of 124 ACs, FAs, PGs, CPAs, CFs, and agricultural unions under Activity 2.1.1. This will include the preparation of a FARM grants manual, technical specifications and procurement packages in consultation with beneficiary groups and procurement of identified infrastructure assets and technologies. In preparing the technical specifications and procurement packages, attention will be paid to the specific and different needs of men and women.

- Sub-activity 2.2.1.1: Train ACs, FAs, PGs, CPAs, CFs, and unions of cooperatives annually to develop financial and business literacy and entrepreneurial skills (with particular focus on youth, women, and other socially excluded minorities) for preparing and updating business plans, including maintenance and operation plans and private finance and insurance plans.
- Sub-activity 2.2.1.2: Procure an initial set of agricultural assets based on the approved business plans to operationalize FARM (average cost of USD 50,000 per beneficiary group with co-financing of between 5 – 20% by the beneficiary group; however, an agricultural union or a group of cooperatives/associations may access a larger amount by pooling funds.
- Sub-activity 2.2.1.3: Establish a FARM account (trust fund) for each beneficiary group to advance its business plan with clearly defined governance arrangements and ongoing business development support (i.e., FARM grants manual, Board of trustees, disbursement eligibility criteria, fiduciary and performance monitoring mechanisms).

Activity 2.2.2: Assess the feasibility of developing additional risk finance options for cashew, mango, and vegetable producers, particularly women farmers.

Description: A feasibility study will be conducted to assess risk financing opportunities for cashew, mango, and vegetable producers to lessen their financial risks due to climate-induced crop loss and damage. Concurrently, the lack of insurance products for supporting agricultural unions, often providing internal quality control for meeting certification standards in bad harvest years, will be addressed to ensure business continuity in assisting individual farmers. The activity builds on the existing agricultural (index-based) insurance products for rice and other crops.

- Sub-activity 2.2.2.1: Train PDAFF, PDoE and PDoC staff, district administration officers, commune and village extension agents, and NGOs, through TOT programs on the costs and benefits of index-based and other insurance products to raise awareness.
- Sub-activity 2.2.2.2: Establish an expert working group to identify index-based risk financing parameters linked to agrometeorological information for cashew, mango, and vegetable production and explore the possibility of developing and piloting prototype index-based insurance products.

Activity 2.2.3: Raise awareness of available financial support products and services in Cambodia systematically among smallholder farmers and local value chain actors, particularly women farmers and value chain actors.

Description: A comprehensive list of various financial institutions as well as types of financial support and risk financing options will be made available for ACs, FAs, PGs, CPAs, CFs, unions, and their individual members to ensure the beneficiary groups have the information necessary to make the needed trust account arrangements and access complementary financial products and insurance services.

- Sub-activity 2.2.3.1: Compile and regularly update a menu of financial support and insurance products and services available for ACs, FAs, PGs, CPAs, CFs and agricultural unions and their individual members in NTSB as part of FFS curricula and demonstration activities and through existing user interfaces (i.e., Tonle Sap App, Chamkar and EcoKasksekor).

Output 2.3: Awareness and knowledge of climate-resilient and sustainable, high-value agriculture increased among farmers and other local value chain actors, particularly women farmers and value chain actors.

119 To counteract the main climate hazards affecting the NTSB, including flooding, drought, pest and diseases, and changes in rainfall patterns, a survey carried out as part of the climate rationale study (FAO, 2022) revealed that value chain actors generally support climate-resilient practices such as the utilization of organic pesticides that can also be cost-saving. They also identified that the harvest phase should be supported with early warning systems to minimize the impact of flooding and pest and diseases.

120 These stakeholder inputs were analyzed together with the existing best practices and lessons learned documented in the country and regionally to identify suitable adaptive measures to be promoted and demonstrated under this output. The analysis considered climate risks and impacts at several critical stages of the value chain cycle for the target crops (Annex 2).

121 Table 9 shows the crop-specific adaptive measures, which are further described in Annex 2 and the climate rationale study (FAO, 2022). Under this output, the PEARL project will promote these measures in conjunction with the improved agrometeorological advisory services and risk awareness among the beneficiaries under Output 1.1. Many of these measures demonstrated under this output will be fully operationalized as part of business plans under Output 2.1 and financed by the FARM under Output 2.2.

Table 9: Crop-specific Climate-Resilient and High-value Measures

STAGE	RECOMMENDED CLIMATE ADAPTIVE/ RESILIENT MEASURES (non-comprehensive list)			
	ORGANIC RICE	**CASHEW**	**MANGO**	**LEAFY VEGETABLES**
Soil Preparation/ Land Management	• Provide accurate and timely weather services before rain events. • Promote minimum soil disturbance practice, minimum tillage, introduction of leguminous crop cover, etc. • Promote laser land leveling where appropriate to reduce water requirements. • Promote postharvest crop residue management. • Promote erosion control and water retention techniques.	• Support CF/CPA management planning to restore primary and secondary forest cover, mixed with sub-sections for agroforestry, agriculture, and other livelihood activities (e.g., NTFPs, apiculture, tourism). • Prevent unsustainable expansion into forested areas. • Promote intercropping and mulching schedule methods (e.g., with leguminous crops). • Promote slope agriculture land technology where applicable.	• Support CF/CPA management planning to restore primary and secondary forest cover, mixed with sub-sections for agroforestry, agriculture, and other livelihood activities (e.g., NTFPs, apiculture, tourism). • Prevent unsustainable expansion into forested areas. • Promote climate-informed expansion to reduce flash flooding and landslide risks. • Promote sustainable soil enrichment and organic fertilizer production and use. • Promote intercropping and mulching schedule methods (e.g., with leguminous crops). • Promote slope agriculture land technology where applicable.	• Promote horticultural operations (e.g., mulching to reduce evaporation, raised beds, organic fertilizer application) to reduce soil moisture loss and flood damage.
Seeds/Variety & Seeding	• Promote quality seed supply and seed testing. • Build local seed production capacity (e.g., seed certification) • Provide crop-specific agro-met information (e.g., climate-informed crop calendar). • Promote stress-tolerance, early maturing, shorter-duration (fragrant) varieties. • Promote mechanization - sowing and transplanting and elements of System of Rice Intensification.	• Promote local and other varieties that are more resistant to droughts, pests, and diseases. • Promote propagation and grafting techniques. • Support farmers' networks to promote suitable varieties.	• Support water management and micro-irrigation infrastructure for nurseries. • Promote research for climate resilient variety development. • Promote propagation and grafting techniques. • Support famers' networks to promote suitable varieties.	• Support production, dissemination, and awareness of climate-resilient seeds/varieties. • Support climate-resilient seed development and research. • Support famers' networks to promote suitable varieties and seeds.
Production/ Flowering/ Fruiting	<u>Wet Season</u> • Invest in broader uptake of water-saving techniques and information on timing of irrigation • Expand farmer field school (FFS) on organic fertilizer production and IPM. • Support cultivation of short-cycle varieties in the eastern and northern parts (e.g., Preah Vihear). <u>Dry Season (optional)</u> • Invest in irrigation needs of dry season rice producers, including advisory support for farmers to grow dry season rice. • Explore the use of underground water for irrigation where feasible. • Develop tailored water use and management advisories linked to agro-met information.	• Tailor climate services based on calendar and sensitive periods to prevent damage. • Develop farm-level training/FFS on water-saving practices, organic fertilizer production, managing pest and disease on mango production (i.e., IPM), incorporating traditional knowledge. • Consider improving pollination services through enhanced awareness and intercropping.	• Develop farm-level training/ FFS on water-saving practices, organic fertilizer production, managing pest and disease on mango production (i.e., IPM). • Trailor climate services based on calendar and sensitive periods to prevent damage. <u>Fruiting</u> • Tailor climate services based on calendar and sensitive periods to prevent damage. • Consider improving pollination services through enhanced awareness and intercropping.	• Promote year-round production based on AquaCrop simulations to increase yields and address seasonality issues. • Apply salt models for estimating the effect of salinity on plant growth. • Promote short-cycle varieties to reduce heat stress at key phenological phases and minimize crop water requirements. • Promote agroforestry systems to reduce evaporation from direct sunlight and decrease air and soil surface temperature. • Promote shade houses to minimize heat stress.

Inputs	• Strengthen agricultural extension capacity/technical functions for providing coherent and relevant guidance and training to farmers. • Provide fertilizer advisory based on soil type. • Increase organic fertilizer production capacity. • Identify a list of quality input suppliers to share with farmers, ACs, FAs, PGs, and unions. • Increase governance capacity, including quality control, of ACs and unions to ensure enabling conditions for climate-resilient and sustainable practice uptake.	• Strengthen agricultural extension capacity/technical functions for providing coherent and relevant guidance and training to farmers (e.g., appropriate agrochemical application). • Provide fertilizer advisory based on soil type. • Increase organic fertilizer production capacity and access, including bio-digesters • Establish a public-private sector coordination mechanism to promote controlled agrochemical product labeling appropriate and minimal agrochemical application. • Identify a list of quality input suppliers to share with farmers, ACs, FAs, PGs, and unions. • Increase governance capacity, including quality control, of ACs and unions to ensure enabling conditions for climate-resilient and sustainable practice uptake.	• Strengthen agricultural extension capacity/technical functions for providing coherent and relevant guidance and training to farmers (e.g., appropriate agrochemical application). • Provide fertilizer advisory based on soil type. • Increase organic fertilizer production capacity and access, including bio-digesters • Establish a public-private sector coordination mechanism to promote controlled agrochemical product labeling appropriate and minimal agrochemical application. • Identify a list of quality input suppliers to share with farmers, ACs, FAs, PGs, and unions. • Increase governance capacity, including quality control, of ACs and unions to ensure enabling conditions for climate-resilient and sustainable practice uptake.	• Strengthen agricultural extension capacity/technical functions for providing coherent and relevant guidance and training to farmers (e.g., appropriate agrochemical application). • Increase organic fertilizer production capacity and access, including bio-digesters • Provide fertilizer advisory based on soil type. • Establish a public-private sector coordination mechanism to promote controlled agrochemical product labeling appropriate and minimal agrochemical application. • Identify a list of quality input suppliers to share with farmers, ACs, FAs, PGs, and unions. • Increase governance capacity, including quality control, of ACs and unions to ensure enabling conditions for climate-resilient and sustainable practice uptake.
Pest Control	• Invest in modeling and research and development of rice pest and diseases to improve understanding of spatial distribution of risks. • Promote IPM linked to provision of tailored agro-met services. • Improve tailored pest and disease warnings and advisories.	• Improve research and data collection on key pest and diseases on cashew production to develop tailored IPM measures. • Strengthen extension services to promote IPM, climate-informed practices, and risk management using agro-met services. • Promote local "traditional" varieties that are resilient to pests and diseases. • Improve tailored pest and disease warnings and advisories. • Use of herbicide alternatives.	• Improve research and data collection on key pest and diseases on cashew production to develop tailored IPM measures. • Strengthen extension services to promote IPM, climate-informed practices, and risk management using agro-met services. • Improve tailored pest and disease warnings and advisories. • Use of herbicide alternatives.	• Strengthen extension services to promote IPM, climate-informed practices, and risk management using agro-met services. • Improve tailored pest and disease warnings and advisories. • Promote control measures, including long rotation of crops, draining soil, mechanical control, and weed management.
Irrigation	• Establish IWM mechanisms to improve water availability and pollution control. • Improve water conservation/ management practices, including use of soil moisture sensors and dry season irrigation options. • Promote fixed-water supply to reduce water losses from direct evaporation.	• Establish IWM mechanisms to improve water availability and pollution control. • Develop natural canal and pond networks. • Monitor water flow and quality and crop water requirements to provide tailored agro-met advisories. • Promote climate-smart irrigation systems and schedules to optimize water resources.	• Promote smart irrigation systems (e.g., drip irrigation and ponds) and schedules to optimize water resources. • Monitor crop water requirements to provide tailored agro-met advisories.	• Develop crop-water models based on AquaCrop simulations to provide tailored agro-met advisories. • Promote low-cost drip irrigation and water storage (e.g., ponds, gravity water tanks) systems.
Harvest	• Promote climate-resilient harvest techniques linked to agro-met advisories. • Promote immediate drying after harvest. • Invest in energy-efficient drying facilities. • Increase knowledge of temperature and humidity control measures.	• Promote climate-resilient harvest techniques linked to agro-met advisories. • Provide tailored climate services and early warning systems to inform farmers' decision to harvest with appropriate timing and methods • Promote immediate drying after harvesting.	• Promote climate-resilient harvest techniques linked to agro-met advisories. • Provide tailored climate services and early warning systems to inform farmers' decisions to harvest with appropriate timing and methods. • Invest in immediate cold storage capacity.	• Promote early morning harvesting to avoid heat stress and UV light. • Promote the use of bamboo crates and wet cloth covers to minimize water loss.

Post-harvest Storage, Milling, and Processing	• Invest in AC and union-level energy-efficient storage facilities (renewable energy sources). • Raise awareness about increased price negotiation power through storage. • Increase knowledge and use of temperature and humidity sensor systems (e.g., ITCs). • Store in aseptic and hermetic bags. • Climate-proof rice storage and processing facilities.	• Promote storing nuts in jute bags and other techniques to decrease mold. • Increase awareness of optimum thermal processing and storage techniques. • Increase use of fan, dehumidifiers, and ventilators to reduce storage loss. • Increase knowledge and use of temperature and humidity sensor systems (e.g., ITCs). • Promote better use of by-products and value-addition strategies (e.g., juice, jam, and honey making through apiculture) • Invest in research and development for value-addition processing options.	• Invest in post-harvest treatment capacity such as hot water treatment to reduce loss and meet international standards. • Promote quality control and certificated processing measures. • Increase knowledge and use of temperature and humidity sensor systems (e.g., ITCs). • Invest in collection centers with cold storage capacity. • Invest in research and development for value-addition processing options. • Invest in sustainable and transport damage-proof packaging. • Promote better use of by-products and value-addition strategies (e.g., juice, jam, and honey making through apiculture)	• Invest in energy-efficient cold storage capacity and post-harvest technologies at AC and union levels (e.g., solar-powered storage facilities, cool-bot equipped cool rooms). • Promote best transport practices (e.g., cold chain capacity). • Invest in research and development for value-addition processing options.
Markets	• Make market information available as part of services for farmers and other local value chain actors through existing market apps (e.g. by IFAD AIMS, ASPIER projects) • Support adoption of CamGAP, GI, organic certification, including Ibis Rice, and other appropriate value-adding certifications. • Establish a close link between target certifications and climate resilience for further value addition. • Build PSPPs to increase collaboration and coordination across value chains (e.g., market networks, trade fairs, matching services). • Increase farmers' and other local value chain actors' business, market and financial literacy. • Raise awareness of climate-resilient and high-value products and their benefits among buyers, exporters, and consumers. • Promote contract farming and direct purchase agreements for increased demand and supply. • Invest in labeling and traceability capacity.			

122 The analysis also recommends an effort to improve existing knowledge management systems that currently exist at an individual initiative level by harmonizing and streamlining their availability and accessibility for the project beneficiaries (these are the same beneficiaries of the FARM) to promote relevant best practices and lessons learned through a variety of mediums, including social media platforms and mobile apps.

Activities under Output 2.3. (See Section E.6.)

Activities, Descriptions and Sub-Activities
Activity 2.3.1: Develop a clearinghouse, consolidating existing knowledge systems, for harmonized knowledge management and systematic dissemination of lessons learned and best practices in climate-resilient, inclusive, gender-responsive, and high-value agriculture for supporting the implementation of the roadmaps and action plans under Activity 2.1.1, and for raising awareness of the practices and technologies under Activity 2.3.2 and associated economic and social benefits. **Description:** A consolidated and improved clearinghouse will systematically collect and disseminate relevant lessons learned and best practices from all past and ongoing pertinent initiatives for promoting climate-resilient, high-value, and sustainable agriculture practices and technologies. The clearinghouse will operate as a one-stop-shop web- platform that provides centralized access to all relevant lessons learned and best practices from various sources to ensure institutionalized knowledge management for supporting systemic progress. The centralized system will assure the quality control and harmonization of information through various mediums, including FFS curricula, Facebook, YouTube channels, and mobile apps (e.g., Tonle Sap App, Chamkar and EcoKasksekor) so that farmers and other local value chain actors have reliable sources of consistent technical guidance and interactively provide feedback and information. The information is also used to promote buyers' informed purchasing and sourcing of agricultural products. • Sub-activity 2.3.1.1: Consolidate and improve existing knowledge systems to established a semi-automated clearinghouse system to collect, process, and disseminate relevant lessons learned and best practices in climate-resilient, inclusive, gender-responsive, and high-value production and processing practices and technologies. • Sub-activity 2.3.1.2: Promote through FFS curricula, Facebook, YouTube channels, and mobile apps (e.g., Tonle Sap App, Chamkar and EcoKasksekor) for on-demand information access among smallholder farmers, other local value chain actors and buyers, particularly women farmers and value chain actors. • Sub-activity 2.3.1.3: Conduct annual training seminars for retailers, hoteliers, restauranteurs, and traders/exporters to increase their awareness of the benefits of climate-resilient, inclusive, gender-responsive, and high-value agriculture to promote informed purchasing and sourcing.

Activity 2.3.2: Provide horizontally and vertically harmonized and targeted extension services, linking the provincial, district, commune, and village levels and public and private extension providers, to promote the adoption of climate-resilient, inclusive, gender-responsive, and high-value practices and technologies relevant for the implementation of roadmaps and action plans developed under Activity 2.1.1 and financed under Activity 2.2.1.

Description: For successful implementation of the provincial-level value chain roadmaps and crop-specific action/business plans prepared by ACs, FAs, PGs, CPAs, CFs, and agricultural unions and financed through FARM under Activity 2.2.1 must be coupled with consistent and coordinated extension services to promote highly relevant production and processing practices and technologies that are climate-resilient, inclusive, gender-responsive, and high-value. Such practices and technologies will include the application of stress-tolerant varieties, small-scale irrigation systems, horticultural techniques (net house, raised bed production, drip irrigation), on-farm and homestead multi-use ponds, composting and organic fertilizer production, elements of the system of rice intensification, solar water pumps and storage tanks, integrated livestock waste management, IPM[19], climate-resilient post-harvest storage, value-addition facilities, and traceability and labeling.

- Sub-activity 2.3.2.1: Design inclusive and gender-responsive training curricula for four target groups - 1) public extension officers at the provincial, district and commune and village levels, 2) private extension providers, including NGOs, 3) trainer/model farmers and local value chain actors, and 4) female farmers and value chain actors - to promote the adoption of climate-resilient and high-value practices and technologies in line with the roadmaps and action/business plans (Output 2.1)
- Sub-activity 2.3.2.2: Conduct biannual training of public extension officers for identifying, demonstrating, and promoting climate-resilient and high-value practices and technologies relevant for the action/business plans.
- Sub-activity 2.3.2.3: Conduct annual training of private extension providers, including NGOs to mainstream climate-resilient and sustainable practices and technologies and clearinghouse knowledge into their services.
- Sub-activity 2.3.2.4: Conduct biannual TOT training of representative farmers and other local value chain actors, particularly women farmers and value chain actors from ACs, FAs, PGs, CFs, and unions on demonstrating and promoting climate-resilient and high-value practices and technologies relevant for their action plans implementation (flexible time arrangements to meet women specific needs).
- Sub-activity 2.3.2.5: Conduct biannual TOT training of representative farmers and other local value chain actors, particularly women farmers and value chain actors from CPAs on demonstrating and promoting climate-resilient and high-value practices and technologies relevant for their action plans implementation (flexible time arrangements to meet women specific needs).
- Sub-activity 2.3.2.6: Establish model farmer and processor demonstration sites to promote the adoption of climate-resilient, inclusive, gender-responsive, and high-value best practices and technologies.

Output 2.4: Improved agro-ecological conditions and connectivity.

123 A recent study on forest landscape restoration opportunities in the NTSB (Bernacki et al., 2018) provides the case for investing in catchment restoration to restore and enhance ecosystem services and downstream agroecology. The report identified restoration interventions to increase forest cover, reduce soil erosion, increase the availability of non-timber forest products (NTFPs), and improve local livelihoods. The approach is also consistent with Cambodia's National Biodiversity Strategy and Action Plan (NBSAP) (2016), which underscores the critical role of agriculture in the maintenance and restoration of ecosystem services and connectivity through ensuring agroecology in the mosaic landscapes of this region.

124 Building on these recommendations, the PEARL project focuses its activities under this output to support CPAs and CFs in restoring and protecting 7,600 ha of critical catchment forests and other ecologically sensitive riparian zones in the upper watersheds through IWM and agroforestry interventions. These interventions will link with the CPAs' and CFs' business plans developed under Output 2.1., the FARM under Output 2.2. and demonstration of alternative practices and technologies under Output 2.3. to ensure that activities draw on market incentives and improved knowledge and skills in climate-resilient practices. From this perspective, IWM and agroforestry activities will promote conservation practices that offer enhanced livelihood options. For example, the project will promote apiculture to increase local pollination services while also increasing income generation opportunities, agroforestry of native and climate-resilient species for fruits and agrotourism opportunities, and value addition of NTFPs.

125 The above study's key guidelines and area estimates were adopted to analyze and identify potential CPAs and CFs to engage in the restoration work under the PEARL project. During project formulation, a study was conducted to identify target CPAs and CFs for PEARL restoration interventions. The study report (Seak, 2022) identifies and recommends 14 CPAs and 6 CFs (Table 10). A large group of these communities is located within the catchment areas of the Stung Sen River, where their catchment restoration and protection activities have a significant bearing on downstream rice-growing regions in Preah Vihear and Kampong Thom provinces.

[19] The project will scale up the efforts of the National Integrated Pest Management (IPM) Program, supported by FAO and the International Rice Research Institute, developed over the past decades.

Table 10: Identified CPAs and CFs

#	CPA/ CF Name	Location (Province/PA)
1	CPA-Kaki Brahoang (Boeng Per Wildlife Sanctuary)	Dang Kambet commune, Sandan District, Kampong Thom
2	CPA-Skor Krouch (Boeng Per Wildlife Sanctuary)	Sandan commune and District, Kampong Thom
3	CPA-Chhoam Thlork (Boeng Per Wildlife Sanctuary)	Ngan commune, Sandan district, Kampong Thom
4	CPA-Kbal Daun Krei (Prey Lang Biodiversity Conservation Corridor)	Mean Rith commune, Sandan district, Kampong Thom
5	CF-Prey Tatei	Mean Rith commune, Sandan district, Kampong Thom
6	CF-Prey O'Kranhoung	Mean Rith commune, Sandan district, Kampong Thom
7	CF-O'Soam	Sala Visai commune, Prasat Balangk district, Kampong Thom
8	CPA-Chup Tasok (Kulen National Park)	Khnang Phnom commune, SvayLeu district, Siem Reap
9	CPA-Prey Thom Anlung Thom (Kulen National Park)	Khnang Phnom Commune, Svay Leu District, Siem Reap
10	CPA-Prey Thom Popel (Kulen National Park)	Khnang Phnom Commune, Svay Leu District, Siem Reap
11	CPA/CF-Sang Sahakum Rokha Vorn (Sang Rokha Vorn Wildlife Sanctuary)	Trapeang Tav and Koun Kriel Communes, Anlong Veng district, Oddar Meanchey
12	CPA/CF-Ratanak Rokha (Sang Rokha Vorn Wildlife Sanctuary)	Samrong and Koun Kriel communes, Samrong municipality [district], Oddar Meanchey
13	CPA/CF-Samaki (Northern Biodiversity Conservation Corridor)	Trapeang Tav Commune, Anlong Veng district, Oddar Meanchey
14	CPA/CF-Thmorda O'Toek Khiev (Northern Biodiversity Conservation Corridor)	Ph'av commune, Trapeang Prasat district, Oddar Meanchey
15	CPA-Akphivoat Prey Veng (Kulen Promtep Wildlife Sanctuary)	Srayang commune, Kulen district, Preah Vihear
16	CPA-Sambo Akphivoat (Kulen Promtep Wildlife Sanctuary)	Srayang commune, Kulen district, Preah Vihear
17	CPA-Pourieng (Kulen Promtep Wildlife Sanctuary)	Kulen Chheung commune, Kulen district, Preah Vihear
18	CF-Prey Mloung	Srayang commune, Kulen district, Preah Vihear
19	CF-Koh Ker Rik Chamroeun	Srayang commune, Kulen district, Preah Vihear
20	CF-Prey Pou Mek Boun	(Kulen Chheung commune, Kulen district), Preah Vihear

126 Other CPAs and CFs are located near the Kulen National Park in Siem Reap and Sang Rokha Vorn Wildlife Sanctuary in Oddar Meanchey. The report recommends the PEARL project to support these CPAs and CFs in designing and implementing restoration and protection activities to improve their livelihood options to achieve the restoration target.

Activities under Output 2.4. (See Section E.6.)

Activities, Descriptions and Sub-Activities
Activity 2.4.1: Restore and protect critical forest catchments in upper watershed areas where the target crops are produced (this activity will build directly on and extend the existing conservation and catchment protection efforts by MoE, WCS[20] and others). **Description:** Establishing an inter-district integrated watershed management (IWM) program with relevant district councils in upper catchment areas of where the target crops are produced will enable both the restoration and protection of critical catchment forests and other sensitive ecological zones and improvement of agroecological conditions, including water availability and quality, while also reducing hazards, for downstream targeted farmers. Such restoration efforts will also increase the livelihood quality of upstream communities through improved ecosystem services and alternative livelihoods development (e.g., apiculture, agroforestry-based (fruits) tourism, NTFP value addition). • Sub-activity 2.4.1.1: Establish an inter-district IWM framework to identify priority areas and interventions for restoring and protecting critical catchment forests and other sensitive ecological zones in upper watershed areas where the target crops are produced. IWM activities will build on and enhance CPAs' and CFs' management plans. • Sub-activity 2.4.1.2: Design restoration and protection plans and provide capacity development in an inclusive and gender-responsive manner for the identified CPAs and CFs through agroforestry, other revenue-generating conservation activities, and contract work. • Sub-activity 2.4.1.3: Support CFs to implement and monitor their restoration and protection plans. • Sub-activity 2.4.1.4: Support CPAs to implement and monitor their restoration and protection plans. • Sub-activity 2.4.1.5: Establish a methodological approach and mechanism to identify baselines, monitor the impacts of catchment protection and restoration, and identify issues for improvement under the inter-district IWM framework.

[20] WCS successfully established a conservation-focused organic rice brand, Ibis Rice, incentivizing local conservation efforts to improve local agroecology and habitat connectivity.

EXPECTED OUTCOME THREE 3: REGULATORY AND INSTITUTIONAL FRAMEWORKS AND CAPACITIES FOR CLIMATE-RESILIENT AGRICULTURAL CERTIFICATION, CROSS-SECTORAL COORDINATION FOR INCREASED PSPPS AND SMALLHOLDER FINANCING, AND CLIMATE-INFORMED INVESTMENT SUPPORT ARE STRENGTHENED.

127 This component will support the delivery of Components 1 and 2 by ensuring enabling conditions through a conducive regulatory and institutional framework. Through this component, an effective vertical and horizontal integration of efforts and best practices across relevant sectors, stakeholder groups, and levels of government will be ensured to support the project in meeting its objective.

Output 3.1: Regulatory and institutional arrangements and capacity relevant to developing certification-based value chains strengthened to provide enabling conditions for adopting climate-resilient, high-value and sustainable agriculture and food security.

128 Institutional support and coordination efforts and mechanisms for supporting the market-based transition of smallholder farmers and other local value chain actors to climate-resilient and high-value agriculture are currently limited. Enabling regulatory and institutional conditions are required to ensure that the certification standards targeted by the project are effective and climate resilient to achieve its goal. A systematic approach to promoting inclusive and gender-responsive financial access for smallholder farmers and other local value chain actors without collateral or guarantor is necessary to complement FARM under Output 2.2 to accelerate their transition. The PEARL project will also improve public-private partnerships, which are currently limited, and intersectoral coordination mechanisms to support the transition to climate-resilient agriculture.

129 Under this output, the PEARL project will support the capacity development of the ARDB as it will play an essential coordination role under Activity 3.1.2 to design and operationalize a scorecard system for the agricultural finance sector and is also expected to be an integral part of the project's exit strategy, as the ARDB with the project's support may develop a complementary GCF project for scaling up low-cost agricultural finance to support Cambodia's accelerated transition to climate-resilient agriculture. The project's capacity development support for the ARDB will include establishing and strengthening its social and environmental policy and transparency and accountability guidelines for the ARDB to demonstrate its leadership in preparing, adopting, and operationalizing the lending scorecard system. Such support may also indirectly contribute to the ARDB's GCF accreditation process.

130 The joint leadership of MAFF and MOE with technical support from FAO Cambodia. Concerning agricultural finance, the ARDB[21] will play a coordinating role. The target beneficiaries of this output include the public institutions and private sector partners at the national and sub-national levels through climate-proofing of certification processes, integration of the private sector into local development planning, and standardization of the smallholder lending approach, prioritizing resilience building. FAO as the AE is currently screening and selecting private partners, starting with consultations with prioritized private sector entities based on a mapping exercise to identify and score their potential roles and contributions to the project and co-develop tailored engagement plans, including capacity development and resource mobilization strategies. Potential private partners are identified based on their leadership in relevant areas concerning the project activities (see Table 5 for examples). The public institutions that benefit from this output include MAFF, MOE, ARDB and the Secretariates of NDSD and NCDD.

Activities under Output 3.1. (See Section E.6.)

Activities, Descriptions and Sub-Activities
Activity 3.1.1: Upgrade/establish an enabling regulatory and institutional framework for the climate-proofed certification programs under Activity 2.1.2. to operate effectively. **Description:** The updated guidelines, training manuals, and tools for the target certification programs under Activity 2.1.2. must be fully underpinned by appropriate regulatory conditions and institutional arrangements to operate effectively and ensure long-lasting impacts. • Sub-activity 3.1.1.1: Mobilize the TWG, established under Sub-activity 2.1.2.1, to identify areas of improvement and recommend actions for ensuring an enabling regulatory and institutional environment for promoting climate-resilient, inclusive, and gender-responsive agricultural certification programs. • Sub-activity: 3.1.1.2: Organize a stakeholder validation meeting(s) for the recommendations and submit stakeholder validated recommendations for amendments in the regulatory and institutional framework to the policymakers for their consideration.

[21] While not an Executing Entity, ARDB will be contracted by the AE to provide specific services related to the lending scorecard development and stakeholder coordination in the financial sector.

Activity 3.1.2: Demonstrate a harmonized sectoral approach to climate-resilient, inclusive, and gender-responsive finance to complement Activity 2.2.1 for rolling out the FARM.

Description: This approach will promote and demonstrate harmonized practices across the agricultural finance to mainstream climate and sustainability considerations as critical de-risking measures by developing and adopting a scorecard system to increase financial access for smallholder farmers and other local value chain actors, particularly women farmers and value chain actors, with limited to no collateral assets.

- Sub-activity 3.1.2.1: Establish a working group with members from public and private financial institutions servicing the agriculture sector to design a lending scorecard system together with a user manual to consider climate-resilience and sustainability as main eligibility criteria for screening loan applications from smallholder farmers and other local value chain actors with limited to no collateral.
- Sub-activity 3.1.2.2: Facilitate agreements with at least three public and private financial institutions to operationalize the scorecard system on a pilot basis.

Activity 3.1.3: Increase private sector engagement in sub-national planning for improved PSPPs.

Description: Effective PSPPs for the development of climate-resilient, high-value, and sustainable value chains for smallholder farmers and other local value chain actors and ensuring food security depend on enabling conditions that forge coordination and collaboration across relevant sectors (i.e., agriculture, finance, food, retail, hospitality, and trade) and between national and sub-national governments. Another such condition is to respond to citizens' voices to create and achieve shared social visions, and this activity will ensure these enabling conditions.

- Sub-activity 3.1.3.1: Strengthen the provincial public forum mechanisms by increasing private sector engagement to facilitate open dialogues between governments, the private sector, and smallholder farmers and local value chain actors to forge effective PSPPs.
- Sub-activity 3.1.3.2: Establish a sub-committee to serve NCSD and NCDD to strengthen cross-sectoral and vertical coordination and institutional arrangements by improving a feedback mechanism between national policy processes and sub-national forums on PSPPs for climate-resilient, inclusive, gender-responsive, and high-value agriculture and improved food security.

Output 3.2: Gender-responsive landscape-level agroecology monitoring system (LAMS) developed to crowd in public and private investments in climate-resilient, high-value and sustainable agriculture.

131 A systematic approach and process to enable strategic investment by the public and private sectors into climate-resilient and high-value agriculture in a strategic and structured manner are currently absent. This hinders a clear understanding and monitoring of capacity gaps and climate finance investment needs, thus limiting the country's ability to direct public spending and private sector investment into creating bankable projects to ensure incremental outcomes. The PEARL project will establish an integrated decision-support tool for systematically monitoring climate risks and suitability shifts, linking to Output 1.1 and identifying investment gaps and opportunities, and monitoring progress to increase public and private investment. This tool will also support the country's effort toward developing and operationalizing an ETF under the Paris Agreement. The primary beneficiaries of this output are MoE and MAFF by supporting the establishment of the ETF concerning agriculture, while the LAMS will serve various needs and interests of public and private partners by providing investment decision support. In developing the LAMS, the project will draw on FAO's international best practices and lessons learned through designing and operationalizing interactive databases and user interfaces (e.g., Collect Earth).

Activities under Output 3.2. (See Section E.6.)

Activities, Descriptions and Sub-Activities
Activity 3.2.1: Establish a gender-responsive landscape-level agroecology monitoring system (LAMS) with an interactive web platform. **Description:** LAMS will offer a one-stop-shop platform for public and private investors in agriculture to make informed investment decisions. LAMS will guide investors by identifying investment gaps and opportunities in making agriculture resilient to climate change, high-value, inclusive, and gender-responsive to maximize their investment returns and track investment progress in terms of emissions, climate resilience, and social and environmental impacts over time. LAMS will be operationally linked to other climate-related monitoring systems (e.g., REDD+ NFMS, NDC ETF). • Sub-activity 3.2.1.1: Establish an expert working group with technical members from institutions managing relevant databases concerning climate change, agricultural production, and related socio-economic development and investment activities to identify the scope of LAMS's function parameters, data needs, and sources, and data sharing and harmonization needs, roles and responsibilities of parties involved, and an annual operating budget. • Sub-activity 3.2.1.2: Facilitate data sharing and harmonization agreements between MAFF (a host of LAMS) and relevant data-holding institutions (NIS, MAFF, MoE, MoC, MWoRAM, and others). • Sub-activity 3.2.1.3: Design a gender-responsive LAMS operating framework with a web interface and an SOP for operating LAMS, including operational guidelines, roles and responsibilities, and training manuals. • Sub-activity 3.2.1.4: Train system analysts and administrators on the SOP to operationalize LAMS. • Sub-activity 3.2.1.5: Refine the predictive models of climate impacts on the target crops and other key crops in AquaCrop and through AEZ methodology based on ground data to aid the identification and selection of climate-resilient investment options under LAMS.

Activity 3.2.2: Promote the use of LAMS in public and private investment decision-making, monitoring, and reporting.

Description: To ensure wide application of LAMS among policymakers, public institutions, and private investors, promotional material development (e.g., leaflets, sample analysis reports shared through social media and email listserv), and awareness-raising and end-user training events, including virtual resources, will be carried out.

- Sub-activity 3.2.2.1: Develop awareness materials (e.g., leaflets, sample analysis performed on LAMS web platform, virtual end-user support materials on YouTube) and an end-user training program.
- Sub-activity 3.2.2.2: Conduct bi-annual end-user training events to promote the broad application of LAMS and collect user feedback to improve LAMS's scope and analytical functions.

XII. Alignment with National Policies and Strategies

Climate Change and Agriculture under Nationally Determined Contribution (NDC)

132 Cambodia's updated NDC (MoE, 2020b) to the Paris Agreement under the UNFCCC underscores agriculture's essential role in both mitigation and adaptation actions. The NDC brings particular attention to the need to increase the resilience of agriculture as it is one of the most affected and economically essential sectors on which a significant proportion of the country's population directly depends. The NDC highlights the expected negative impact of food systems, increasing the risk of food insecurity and malnutrition, particularly among vulnerable groups, including the poor, women, children and other socially excluded minorities. Concerns over how such impacts disproportionately affect female farmers' labor allocation and workload are emphasized to call for gender-responsive action and the need to collect gender-disaggregated data to better understand the effects of climate change on women in agriculture.

133 Out of the 58 priority adaptation actions identified in the updated NDC, 17 focus on agriculture (ibid.). Among such priority adaptation actions, ten are directly relevant to increasing the adaptive capacity of the NTSB through the promotion of climate-resilient and higher-value production of cashew, mango, organic rice, and leafy vegetables among smallholder farmers. For the agriculture sector, the NDC estimates the cost of climate change adaptation at USD 306 million, much of which is expected to come through international support.

134 These climate change adaptation actions to increase the resilience of crop systems and agricultural livelihoods also deliver mitigation co-benefits, for instance, through the organic fertilizer and biogas production and improved land management practices for increased agroecological functions and crop suitability. The NDC calls for increased public-private partnerships (PPPs) to unlock private sector investment and promote technology transfer and a market-driven transition towards a climate-resilient and sustainable development pathway. The NDC also stresses the need for improved institutional arrangements and capacity among the MAFF, MOE, and MOWRAM through data collection, analysis, management, monitoring and reporting, ensuring an enabling regulatory environment for PPPs, and advancing the above priority adaptation actions(ibid).

135 The NDC contributes directly to the Cambodia Climate Change Strategic Plan (CCCSP) (2014), which builds on the NSDP and Rectangular Strategy IV.

National Adaptation Plan (NAP) Process

136 Cambodia's NAP process builds on the National Adaptation Programme of Action (NAPA) (2006) and identifies a lack of access to financial, technological, and human resources as the primary challenge and sets out medium and long-term adaptation goals in critically affected sectors, including agriculture and water resources and human health. The NAP process begun in 2014 to advance four key elements: 1) laying the groundwork, 2) working preparatory elements, 3) developing implementation strategies, and 4) setting up reporting and monitoring framework to place the adaptation to climate change at the center of policy agenda (GSSD, 2017). Together with the NDC, the NAP also contributes to NSDP and CCCSP.

Cambodia's GCF Country Programme

137 Building on its NAPA, NAP process, CCCSP and sectoral climate change action plans, Cambodia's GCF Country Programme (2020a) identifies agriculture, water resources, infrastructure, forestry, health and coastal development as its priority investment areas for climate change adaptation. Agriculture and forestry are also considered key sectors for climate change mitigation. The Country Programme ranks the PEARL project as its top priority adaptation project. Establishing effective PPPs to leverage private investment for supporting adaptation actions is an essential strategy under the Country Programme. Cambodia currently has one Direct Access Entity (DAE), the National Committee for

Sub-National Democratic Development Secretariat (NCDD). Increasing the number of DAEs in Cambodia is another priority. In this context, the ARDB is currently considered by the NDA for DAE nomination.

Climate Change Action Plan for Agriculture, Forestry and Fisheries Sector

138 Directly contributing to the CCCSP, the Climate Change Action Plan for Agriculture, Forestry and Fisheries Sector 2016-2020 (CCPAP-AFF) (MAFF, 2016) aims to develop appropriate institutional capacity and human resources in the sector to devise new and innovative technologies and measures. It also aims to increase farmers' awareness of climate-related risks and options and ensure that they have the necessary means to adopt climate-resilient technologies and measures to minimize their crop and livestock damage and loss. The CCPAP-AFF identifies strategic objectives in its sub-sectors – 1) food security and livelihoods; 2) plantation; 3)livestock; 4) forest management; and 5) fisheries – with actions to reduce their greenhouse gas emissions and increase their adaptative capacities to cope with increased floods, droughts, temperatures, and pest and diseases. For food security and livelihoods, priority actions include the promotion of sustainable farming systems and postharvest technologies, development of suitable crop variety and an information system of climate change impacts on agriculture and livelihoods, research and development of climate-smart technologies and techniques, capacity building of agricultural cooperatives and SMEs in climate-smart agriculture.

139 While the CCPAP-AFF sets out a comprehensive plan of action that sets ambitious targets, the less than 50% of the US$ 246 million required for the full implementation of the CCPAP-AFF was secured at the start of its implementation (ibid.). The sources of finance include the Secretariat Working Group on Agriculture, Forestry and Fisheries (SCAFF), government annual budget allocation, loans and grants from the World Bank, Asian Development Bank and International Fund for Agricultural Development. Although various climate change funds through the United Nations and bilateral agencies also provide additional support, much more is still needed to close the current financial gap.

Cambodian Sustainable Development Goals (CSDGs) Framework (2016-2030)

140 Guided by the NSDP and Rectangular Strategy IV, the CSDGs Framework (2018a) sets out the country-specific targets and indicators to track and monitor its progress towards its 18 goals, adapted from the Global Sustainable Development Goals to meet specific national circumstances. The CSDGs particularly relevant to the proposed project include Goal 1 (no poverty), Goal 2 (zero hunger), Goal 5 (gender equality), Goal 13 (climate action), and Goal 15 (life on land). According to the Framework, the average rural poverty rate will be halved, the value of agricultural production per capita will be doubled, and public expenditure on climate actions will also be increased by one percentage point by 2030.

FAO's Country Programme Framework 2019-2023

141 Building on the RGC's national development, sectoral and climate priorities, as briefly described above, and the United Nations Development Assistance Framework (UNDAF) 2019 – 2023, combined with FAO's corporate strategic objectives on Better Environment and Asia-Pacific regional priorities on Accelerating sustainable natural resources management for biodiversity conservation and climate action, FAO in Cambodia aims to achieve three key outcomes:

- Enhanced agricultural productivity, diversification and commercialization, and safe and nutrition-sensitive food systems for poverty reduction and food and nutrition security.
- Equitable and sustainable management of natural resources, and increased capacity to monitor and report climate action.
- Reduction of vulnerability, and improved resilience to climate change and shocks at national, community and household level.

142 The PEARL project contributes to the delivery of these outcomes, for example, by 1) promoting organic agriculture, GAP, and GI and innovative, inclusive, and gender-responsive practices, guided by relevant best practices and lessons-learned, under Outcome 1, 2) restoring and protecting critical catchments and agroecological functions and connectivity through an equitable approach under Outcome 2, and 3) increasing the resilience and adaptive capacity of vulnerable farmers and other value chain actors through improved access to highly tailored climate risk information, adaptive knowledge, finance and technologies under Outcome 3.

B.4. Implementation arrangements (max. 1500 words, approximately 3 pages plus diagrams)

XIII. Implementation Arrangements (see Figure 10)

Accredited Entity (AE)

143 FAO will serve as the Accredited Entity (AE) for this project. As such, FAO will be responsible for the overall management of the project, including: (i) all aspects of project appraisal; (ii) administrative, financial and technical oversight and supervision throughout project implementation; (iii) ensuring funds are effectively managed to deliver results and achieve objectives; (iv) ensuring the quality of project monitoring, as well as the timeliness and quality of reporting to the GCF; and (v) project closure and evaluation. FAO will ensure these responsibilities in accordance with the detailed provisions outlined in the Accreditation Master Agreement (AMA) between FAO and GCF.

144 FAO role as AE will be attributed to the relevant offices and divisions in FAO Headquarters located in Rome, Italy (HQ), Sub-Regional Office for Asia and the Pacific (FAO-RAP) located in Bangkok, Thailand and FAO Representation in Cambodia (FAO-Cambodia).

145 In order to fulfil the AE functions, FAO will set up a dedicated Project Task Force (PTF) in line with FAO project cycle guidelines. The PTF will be composed by the Budget Holder (BH), the Lead Technical Officer (LTO), Funding Liaison Officer (FLO), HQ Technical Officer and other officers, as appropriate.

146 The PTF will remain independent from the Executing Entity functions also performed by FAO (see Project execution section below). In line with the GCF policy on fees adopted through GCF Board Decision B.19/09, the above-mentioned segregation of responsibilities within FAO will ensure that the Organization can independently and effectively perform the AE functions listed in the GCF General principles and indicative list of eligible costs covered under GCF fees and project management costs.

Project co-financing

147 The Royal Government of Cambodia acting through MAFF and MoE will provide co-financing in the form of in-kind contribution to the project: (1) through MAFF USD 3.69 million and (2) through MoE USD 2.258 million. The co-financier is responsible for reporting to the AE in accordance with the detailed provisions outlined in the GCF policies as well as AMA, Funded Activity Agreement (FAA) between FAO and GCF and the Project Agreement between the Host Country and FAO in its capacity of AE, which will also cover co-financing activities execution, and the disbursed and allocated co-financing amount. The Royal Government of Cambodia acting through MAFF and MoE will be responsible for executing and managing their co-financing funds under the coordination of the Project Management Unit (PMU) and through the Project Steering Committee (see Project execution section below).

148 FAO will provide US$ 0.67 million co-financing in the form of in-kind.

Other project partners

149 Several partners will be engaged in the project either to ensure complementarity with their activities and/or delivery of goods, works and services. These may include, MoWRAM, MoC, ARDB and NGOs (potential NGO partners include GRET, IRAM and WCS) as procured parties. The procured parties, such as NGOs, will be selected through an open and competitive bidding process.The procured parties will be selected during project implementation in accordance with relevant FAO Manual Sections.

Executing Entities

150 The project will be executed by The Royal Government of Cambodia acting through MAFF and MoE and FAO in to deliver the project activities (see Table 11).

151 FAO will act as co-EE and will ensure strong country-driven execution of project activities and execute the in-kind contribution from the FAO (LDCF and IW/GEF) and will also be in charge of the execution of selected activities funded by GCF proceeds based on its comparative advantages.

152 A FAO Project Execution Team (PET) will be set up in FAO-Cambodia, comprising relevant FAO country personnel (Assistant FAO Representative of Programme, Administrative and operational staff) and will be responsible for FAO EE function.

153 The Royal Government of Cambodia acting through MAFF and MoE will executing project activities funded by GCF proceeds. FAO will enter into Operational Partnership Agreements with MAFF and MoE.

154 The Royal Government of Cambodia acting through MAFF and MoE will be responsible for executing their co-financing activities.

Table 11: Assignment of EEs (see Annex 4 for sub-activity level assignments)

Component 1 Farmers' capacities are enhanced to manage climate impacts and related risks					
Output	**Activity**	**Sub-activity**	**EE**	**Co-finance**	**Funding Source**
1.1	1.1.1	1.1.1.1	FAO		GCF
		1.1.1.2	FAO		GCF
		1.1.1.3	FAO		GCF
	1.1.2	1.1.2.1	MAFF		GCF
		1.1.2.2	MAFF	MAFF	GCF
		1.1.2.3	MAFF	MAFF	GCF
	1.1.3	1.1.3.1	MAFF	MAFF	GCF
		1.1.3.2	FAO	FAO	GCF
Component 2: Adaptive capacity of smallholder farmers and other local value chain actors, particularly vulnerable women farmers, is increased through market incentives that promote climate-resilient, higher-value, diversified, and sustainable production and processing.					
Output	**Activity**	**Sub-activity**	**EE**	**Co-finance**	**Funding Source**
2.1	2.1.1	2.1.1.1	FAO		GCF
		2.1.1.2	FAO		GCF
		2.1.1.3	MAFF		GCF
		2.1.1.4	MoE	MoE	GCF
		2.1.1.5	MAFF	MAFF	GCF
		2.1.1.6	FAO		GCF
		2.1.1.7	MAFF	MAFF	GCF
		2.1.1.8	MoE	MoE	GCF
		2.1.1.9	FAO		GCF
		2.1.1.10	MAFF		GCF
	2.1.2	2.1.2.1	MAFF		GCF
		2.1.2.2	MAFF		GCF
		2.1.2.3	MAFF	MAFF	GCF
		2.1.2.4	FAO		GCF
2.2	2.2.1	2.2.1.1	FAO		GCF
		2.2.1.2	FAO		GCF
		2.2.1.3	FAO		GCF
	2.2.2	2.2.2.1	MAFF	MAFF	GCF
		2.2.2.2	MAFF		GCF
	2.2.3	2.2.3.1	MAFF		GCF
2.3	2.3.1	2.3.1.1	FAO	FAO	GCF
		2.3.1.2	MAFF		GCF
		2.3.1.3	MAFF		GCF
	2.3.2	2.3.2.1	FAO		GCF
		2.3.2.2	MAFF	MAFF	GCF
		2.3.2.3	MAFF		GCF
		2.3.2.4	MAFF	MAFF	GCF
		2.3.2.5	MoE	MoE	GCF
		2.3.2.6	MAFF	MAFF	GCF
2.4	2.4.1	2.4.1.1	MoE	MoE	GCF
		2.4.1.2	FAO		GCF
		2.4.1.3	FAO		GCF
		2.4.1.4	MoE	MoE	GCF
		2.4.1.5	FAO	FAO	GCF
Component 3 Regulatory and institutional frameworks and capacities for climate-resilient agricultural certification, cross-sectoral coordination for increased PSPPs and smallholder financing, and climate-informed investment support are strengthened					
Output	**Activity**	**Sub-activity**	**EE**	**Co-finance**	**Funding Source**
3.1	3.1.1	3.1.1.1	MAFF	MAFF	GCF
		3.1.1.2	MAFF		MAFF
	3.1.2	3.1.2.1	FAO		GCF

		3.1.2.2	FAO		GCF
	3.1.3	3.1.3.1	MoE	MoE	GCF
		3.1.3.2	MoE	MoE	GCF
3.2	3.2.1	3.2.1.1	MoE	MoE	GCF
		3.2.1.2	MoE		GCF
		3.2.1.3	FAO		GCF
		3.2.1.4	MoE	MoE	GCF
		3.2.1.5	FAO		GCF
	3.2.2	3.2.2.1	MoE		GCF
		3.2.2.2	MoE		GCF

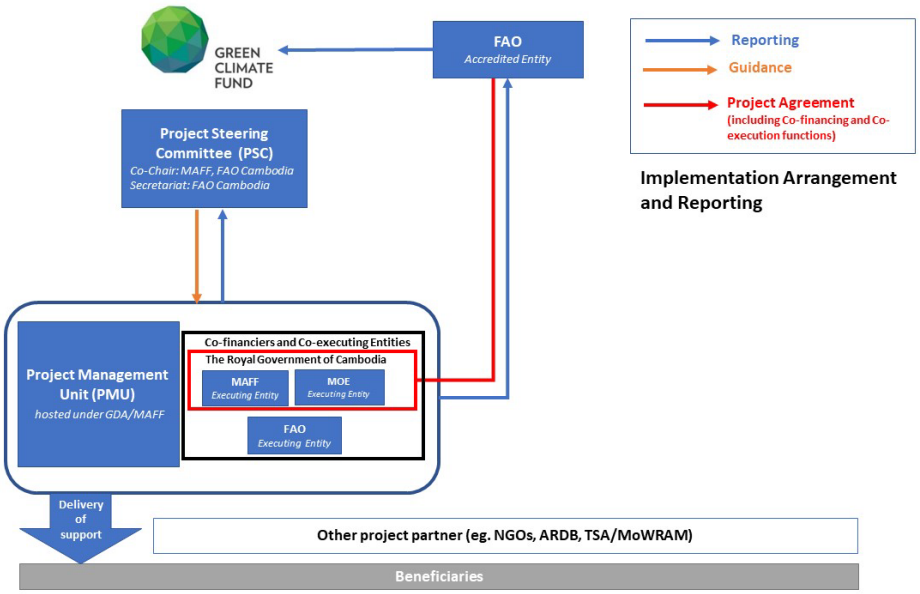
Project Execution

155 A dedicated **Project Management Unit (PMU)** will be established and hosted by MAFF in Cambodia. The PMU will be functional for the entire duration of the project. The PMU will be established at the General Directorate of Agriculture at the MAFF (GDA/MAFF) in Phnom Penh, Cambodia. The PMU will coordinate directly with EEs and project stakeholders and will be responsible for providing support to the execution of day-to-day activities the technical quality of the project outputs, effective stakeholder engagement.

156 The PMU will be led by a National Project Director (NPD) and managed by a project-recruited National Project Coordinator (NPC). The NPD will be appointed/nominated by the GDA/MAFF (see Table 12). NPC will be responsible for overall project management and coordination with project stakeholders. The PMU will also include a finance officer, operation officer, Human resources & admin officer and procurement & contracting officer.

157 Within the PMU, project-recruited staff and staff seconded by the government will collectively comprise a project delivery team that will ensure sound and effective project implementation. The specific roles of critical members of this project delivery team are described in Table 12.

Figure 10: Implementation Arrangements



Project Steering Committee

158 A Project Steering Committee (PSC) will be established to provide strategic guidance for the project. The PSC will be co-chaired by MAFF and FAO-Cambodia.

159 The NPC of the PMU will serve as Rapporteur to the PSC. The PSC will be comprised of representative members from relevant ministries, other Procured Parties. The PSC will also invite representatives from relevant CSOs, the private sector, and academia as necessary to discuss thematic issues as well as partnership opportunities. The role of the PSC will be to:

- Provide overall guidance and direction to the project, ensuring it remains within any specified constraints;
- Address project issues as raised by the national project coordinator;
- Monitor project risks and the effectiveness of mitigation measures, and provide guidance on new project risks, and agree on possible countermeasures and management actions to address specific risks;
- Review the project progress, and provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily according to plans;
- Review and agree with annual work plan and provide necessary strategic guidance for its implementation;
- Appraise the annual project implementation report, including the quality assessment rating report; make recommendations for subsequent work plans to build on achievements and address any shortcomings;
- Provide ad hoc direction and advice for exceptional situations when the project coordinator's tolerances are exceeded.

160 FAO as a co-chair with the government partner will have a joint final decision-making authority of the PSC. The PSC will be expected to meet formally at least once every 12 months. Formal meetings will be scheduled and arranged by the National Project Coordinator in consultation with, and at the request of PSC members (with tentative dates for the following meeting being agreed under Any Other Business). Extraordinary meetings of the PSC can be requested by any of its members.

Table 12: Key Positions

No.	Position	Duration	Responsible Areas	Responsibility
1	National Project Director (co-financed position)	Part-time	PMU and All Outcomes	• Provide overall directions and guidance and operational leadership for all activities. • Provide high-level coordination support between all EEs and Procured Parties..
2	National Project Coordinator (National Technical Advisor)	72 months	PMU and All Outcomes	• Ensure day-to-day project operations and coordination with all stakeholders involved in project implementation. • Oversee all planning activities, including annual work planning and budgeting, and coordinate PMU-led recruitment, procurement, and monitoring and reporting activities. • Ensure timely mobilization of all necessary resources, including co-finance.
3	International Senior Project Officer (Chief Technical Advisor)	66 months	PMU and All Outcomes	• Oversee technical activities in all outcome areas. • In close coordination with the Project Director, National Technical Advisor, and national counterparts, supervise and coordinate the work of all international and national experts to ensure timely deliverables that meet FAO/GCF quality standards and reflect international best practices. • Ensure strategic and technical linkages and coherence between the outcomes and outputs.
4	Head of Operations (international)	17 months	PMU and All Outcomes	• Provide overall guidance on all operational matters based on FAO rules and regulations and international best practices. • Ensure quality assurance of all technical, operational, and financial activities.
5	International Operations Officer	30 months	PMU and Outcome 2	• Liaise with various units of the FAO-Cambodia to ensure all operational activities are planned and carried out in a timely manner and in compliance with the necessary rules and regulations. • Support the development of operational and procurement specifications under FARM.
6	National Operations Officer	72 months	PMU	• Oversee all operational matters under PMU. • Provide capacity development support to the co-EEs to establish the necessary quality control mechanisms that match FAO/GCF quality control standards for operational issues.
7	National Procurement/Grant Specialist	72 months	PMU	• Manage all procurement activities under PMU. • Support the procurement of goods and services under Component 2 as required.
8	National Finance Specialist	72 months	PMU	• Prepare financial plans and expenditure reports. • Make payments and track expenditures and process payments. • Provide capacity development support to the co-EEs to establish the necessary quality control mechanisms that match FAO/GCF quality control standards for financial matters.
9	National Finance Associate	72 months	PMU	• Assist the National Finance Specialist in financial management and quality control.
10	National Human Resources Specialist	72 months	PMU	• Coordinate all human resources recruitment and related activities to ensure timely implementation of project activities.

11	National Administration Assistant	72 months	PMU	• Assist project staff in ensuring day-to-day project operations and coordination, and carry out any other secretarial tasks.
12	International Technical Advisor for MEAL	500 days	All Outcomes	• Lead the development of a Monitoring, Evaluation, Accountability, and Learning (MEAL) strategy and MEAL system. • Develop the project staff's capacity for implementing the MEAL strategy/system.
13	National MEAL Specialist	72 months	All Outcomes	• Coordinate the implementation of the MEAL strategy/system. • Prepare MEAL reports based on the MEAL Plan (Annex 11).
14	National MEAL Assistant	72 months	All Outcomes	• Assist the International Technical Advisor and National Specialist for MEAL in providing staff capacity development support and implementing the MEAL Plan.
15	National Communications Specialist	72 months	All Outcomes	• Develop and implement a communications strategy. • Support all communication-related activities under the project, including knowledge sharing and management.
16	National Safeguard Specialist	72 months	All Outcomes	• Prepare and implement specific social and environmental management plans based on the ESMF (Annex 6) and Stakeholder Engagement Plan (Annex 7). • Handle activities related to reporting and investigating disputes through the grievance redress mechanism. • Monitor and report progress and newly arising risks.
17	National Gender Specialist	72 months	All Outcomes	• Coordinate the implementation of the Gender Action Plan (Annex 8) and Stakeholder Engagement Plan (Annex 7). • Handle activities related to reporting and investigating cases concerning Sexual Exploitation, Sexual Abuse, and Sexual Harassment (SEAH). • Support the project staff's and co-EE's capacity in gender mainstreaming and women's empowerment.
18	International Technical Advisor on Agrometeorology	36 months	Outcome 1	• Oversee the planning and implementation of all activities under Component 1 to ensure effective and timely sequencing of all key deliverables while meeting FAO/GCF quality standards. • Provide technical guidance on agrometeorological information production and dissemination and related capacity development activities.
19	National Agriculture Extension Advisor	72 months	Outcomes 1 and 2	• Support the beneficiary groups and public and private extension services in identifying and demonstrating appropriate climate-resilient, high-value and sustainable techniques, and technologies through various outreach and extension activities in coordination with relevant experts and government counterparts. • Coordinate Behavior Change Communication (BCC) activities under Outcomes 1 and 2 together with the National Communications Specialist.
20	National Operations Officers (Two positions - Supporting Government co-EEs)	72 months	Outcomes 1 and 2	• Support the co-EEs' (i.e., MAFF and MoE) operational activities under Outcomes 1 and 2 • Ensure all activities, including reporting, comply with PMU/FAO/GCF standards, processes, and procedures.
21	International Technical Advisor for Value Chain Development	72 months	Outcome 2	• Oversee the planning and implementation of all activities under Component 2 to ensure effective and timely sequencing of all key deliverables while meeting FAO/GCF quality standards. • Lead all value chain development activities, including PSPP establishment and marketing.
22	International Technical Advisors for Target Crops (4 positions)	221 days per position	Outcome 2	• Provide technical agronomic advisory services and crop-specific production strategies in coordination with the International Technical Advisors for Value Chain Development and Agrometeorology.
23	National Agricultural Advisor	462 days	Outcome 2	• Support the implementation of crop-specific production strategies. • Provide related capacity development support to the beneficiary groups and extension providers.
24	International Agricultural Finance Advisor	462 days	Outcome 2	• Provide strategic and technical guidance to the establishment of FARM.
27	National Procurement/Grant Associate	72 months	Outcome 2	• Manage FARM-related procurement cases. • Handle other procurement activities under Outcomes 1 and 3, as needed.
25	Provincial Value Chain Specialists (4 positions)	72 months	Outcome 2	• Coordinate the implementation of value-chain development activities in the respective provinces.
26	Provincial Value Chain Assistants (4 positions)	72 months	Outcome 2	• Assist the Provincial Value Chain Specialists by executing administrative and operational tasks.
28	National Watershed Management Specialist	72 months	Outcome 2	• In coordination with MoE, design and implement catchment restoration and protection plans and activities with the identified CPAs and CFs.
29	National Policy Analysis Advisor	72 months	Outcome 3	• Oversee the planning and implementation of all activities under Component 3 to ensure effective and timely sequencing of all key deliverables while meeting FAO/GCF quality standards.

30	International Investment Planning Advisor	462 days	Outcome 3	• Provide strategic and technical guidance and support in developing a lending scorecard system and LAMS in coordination with other experts and government counterparts.
31	National Geographical Information System (GIS) Advisor	72 Months	Outcome 3	• Develop a geospatial information portal and data management system linking to LAMS and supporting activities under Outcomes. • Assist project activities with GIS support. • Support the co-EEs in strengthening their GIS capabilities.
32	National GIS Associate	36 months	Outcome 3	• Assist the National GIS Advisor in providing various GIS support activities.

Flow of funds and contractual arrangements (see Figure 11)

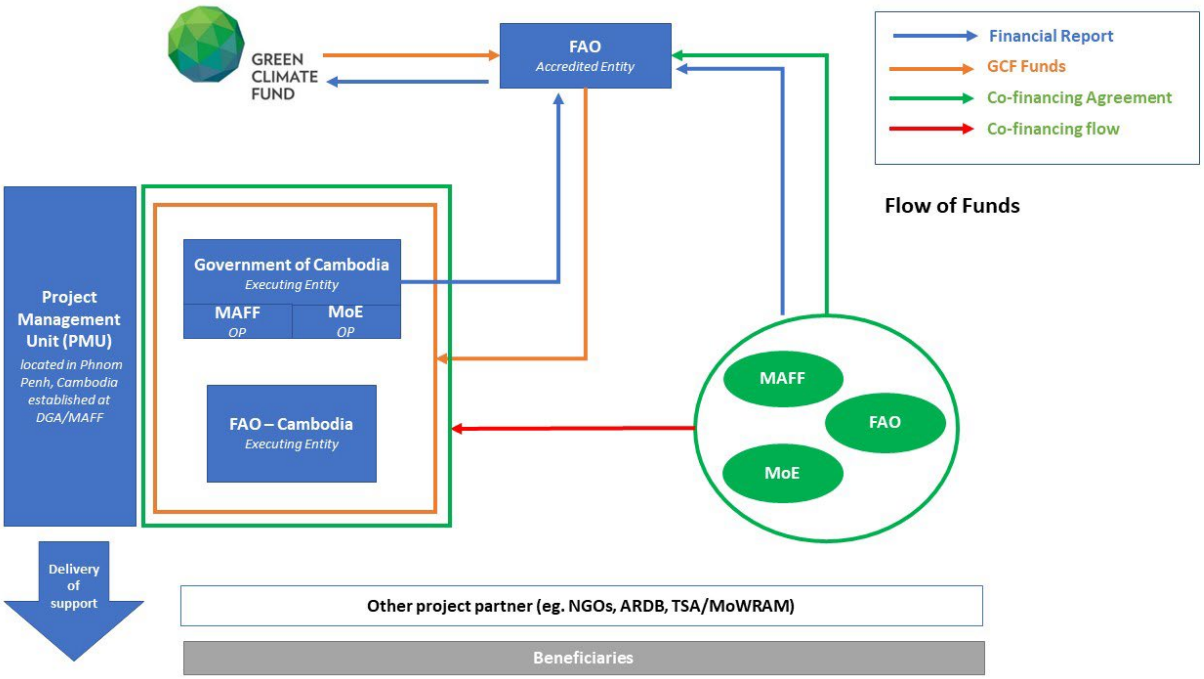
161 FAO will enter into a Project Agreement with the Host Country acting through MoE, which covers 1) provisions on the Convention on the Privileges and Immunities of the Specialized Agencies, 2) provisions with respect to the co-financing to be provided by the Host Country acting through MoE and MAFF, and 3) the respective roles and responsibilities of the Accredited Entity and the Host Country, acting through MoE and MAFF for the implementation of the Project. The Project Agreement will be legally binding for both MoE and MAFF under the Government of the Cambodia.

162 In line with the project implementation arrangements outlined above, GCF proceeds received by FAO in its capacity as Accredited Entity will flow to FAO as EE as well as the Ministry of Agriculture, Forestry and Fisheries (MAFF), and the Ministry of Environment (MoE) for the implementation of the identified project activities. In accordance with FAO Manual Section 701, FAO will enter into two Operational Partnership Agreements (OPAs) with the two operational partners namely MoE and MAFF after FAA effectiveness.

163 Procured parties will be contracted in accordance with FAO rules and regulations of procuring goods and services (e.g. FAO Manual Section 502 and 507).

164 FAO will execute the project in accordance with FAO rules, regulations, policies and procedures. Financial management and procurement under this project will be guided by relevant FAO rules and regulations as relevant provisions in the Accreditation Master Agreement (AMA) signed between FAO and GCF. These rules and regulations were reviewed by GCF and deemed satisfactory by the GCF Secretariat and Accreditation Panel as part of FAO's accreditation to GCF.

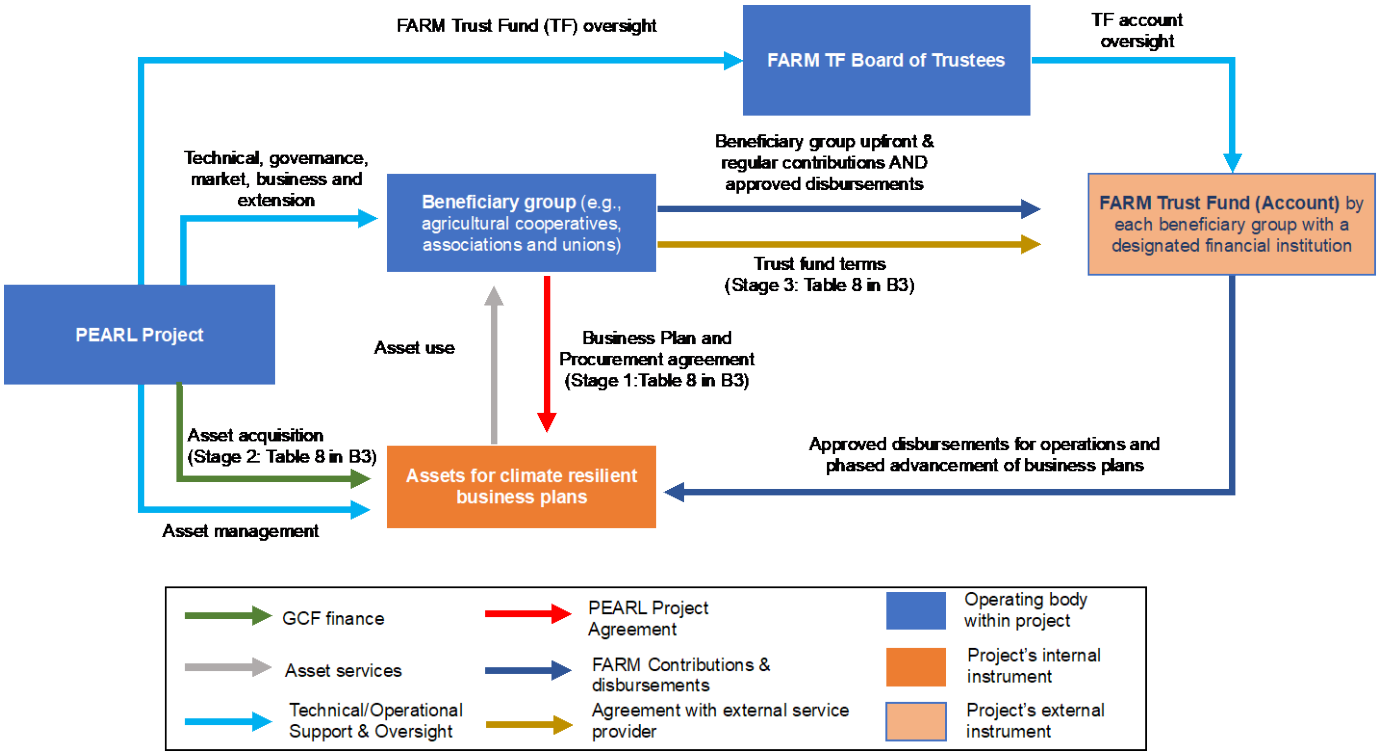
Figure 11: Flow of Funds



165 Figure 12 shows the operational arrangements for the FARM. The project will be responsible for procuring the assets identified in the business plans of the beneficiary groups while ensuring that the beneficiary groups receive the

necessary technical and operational support. As referred to in Figure 12, specific agreements and terms under each successive stage of the FARM are specified in Table 8 under Section B3. The project will also develop a FARM grants manual during the inception stage to clarify specific procedures and requirements at each of the three stages. Each beneficiary group will establish its individual FARM Trust Fund account with a local microfinance bank, using a standard trust account service package available at the bank. The project will support the beneficiary group in selecting appropriate terms and conditions with the bank.

Figure 12: FARM Operational Arrangement



B.5. Justification for GCF funding request (max. 1000 words, approximately 2 pages)

166 Cambodia is an LDC with many development priorities and investment needs. One of these priorities is accelerating the current effort to adapt its agriculture sector to climate change. The country's economy and its rural population heavily depend on this sector, and rural agrarian communities are highly vulnerable to the observed and anticipated impacts of climate change due to widespread poverty. The NTSB is vital in this respect as nearly a third of the country's agricultural output comes from this region, and 20% of the country's population, mainly engaged in agriculture, resides there.

167 However, Cambodia has limited financial and technical capacity to address this urgent need on its own adequately. The RGC is also aware that both public and private finance is necessary to harness the benefits of value-chain approaches to address the challenges facing the NTSB. Given the current lack of regulatory and incentive mechanisms, the RGC recognizes the need for public sector efforts to establish the necessary enabling conditions to leverage and unlock private sector investment in the medium to long term. In this context, the proposed PEARL project is considered a timely and the most critical priority project under Cambodia's GCF Country Programme (2020a).

168 The requested GCF support is thus expected to assist this effort by the RGC to encourage private-sector actors, particularly agricultural suppliers, traders/exporters, retailers, and local financial institutions, to work in partnership with the project's target beneficiaries to adopt and further invest in climate-resilient and high-value practices. Through this effort, the RGC also intends to expand the value chain concept to include consumers as a critical group of actors to promote an accelerated transition to climate-resilient and sustainable agriculture and secure increased access to safe, quality, and sustainably produced agricultural products in the country.

169 The financial support from the GCF will directly contribute to the country's current effort toward realizing the full-scale implementation of the CCPAP in agriculture, while the project's value-chain approach keeps investment risk low.

The activities included in the project would not be viable at a lower level of concessionality, as revenue-generating activities are not included in the project. The project will partner with private-sector actors who are SMEs with limited resources to reconfigure and scale up their existing practices and businesses for the climate change adaptation of smallholder farmers and other small-scale local value chain actors. The project's intervention is crucial to increase, the awareness of climate risks through Outcome 1as well as the capacity of smallholder farmers and local value chain actors to meet specific certification standards and their technological access through the FARM (Outcome 2). The private sector partners will focus their scarce resources on market inclusion and development. Both interventions (GCF proceeds and SMEs) are needed and complementary. The successful adaptation approach based on premium price market opportunities promoted by the project will trigger the partner SMEs to continue and champion this process through PSPPs by leveraging further investment and crowding-in others in the post-project environment.

170 GCF grant financing will be directed towards capacity development and the establishment of enabling regulatory and institutional conditions while working with private sector partners to make market opportunities, finance, and technologies more accessible to smallholder farmers, ACs, FAs, PGs, and agricultural unions. The areas of intervention under the project are generally considered non-bankable by the private sector. Without GCF grant financing, it would not be possible to capitalize on these high-value markets to support the project's beneficiaries in shifting to climate-resilient agriculture.

B.6. Exit strategy (max. 500 words, approximately 1 page)

171 The project's potential for sustainability and replicability is built on PSPPs through the integrated landscape and value-chain approaches. PSPPs are especially suited for the agriculture sector, where public needs from both the producers' and consumers' perspectives must be met with the efficiency and finance of the private sector under a robust regulatory framework. Having such shared social values and visions will ensure fair and equitable distribution of benefits and responsibilities among value-chain actors to galvanize their value chains into internalizing as much as possible social and environmental externalities through producing and securing market access for climate-resilient, quality, safe, and sustainably produced agricultural products.

172 Through the PEARL project, smallholder farmers and other local value chain actors currently without full access to high-value premium price markets will have developed pertinent knowledge and skillsets to meet various market requirements and incorporate climate risk mitigation measures into their agricultural practices. These beneficiaries will have received capacity development support to prepare, update and operationalize highly tailored business plans and manage and reinvest their increased revenues through the FARM to continue advancing their climate-resilient and high-value agriculture and sustainable livelihood visions. The project will have facilitated the development of partnerships between these beneficiaries and private-sector actors in supply, purchasing, export, sales, microfinance, and insurance and ensured enabling regulatory and institutional conditions. As indicated earlier, the majority of value-chain leaders are SMEs. Through such partnerships, the project will have also demonstrated the viability of their engagement in value chain development and expansion that focuses on inclusion, climate resilience, and sustainability to create the necessary momentum for further unlocking private investment for climate-resilient agriculture in the post-project phase.

173 The project's beneficiaries will thus be able to continue expanding their knowledge and skill base and leverage additional financial and technological resources as necessary to sustain and improve their climate-resilient, higher-value, and sustainable agricultural practices through the established PSPPs. In addition, the ARDB, through the project's support, is expected to lead and scale up Cambodia's microfinance lending for the climate change adaptation of smallholder farmers and other small-scale local value chain actors, together with other partners in the finance sector, and expand its effort to develop climate-resilient and green investment projects during the project and in the post-project phase. Once the ARDB successfully becomes an accredited entity under the GCF, the ARDB is expected to design an agricultural investment project to scale up and replicate the results of the project in other parts of the country.

174 From the perspective of agricultural certification, the project is highly likely to succeed and replicate as it builds on existing best practices. For instance, under the Law on GIs in Cambodia (2014), Kampot pepper and Kampong Speu palm sugar have already been registered as GI goods. Kampot pepper, for example, has gained formal brand protection within the EU, reaching 500 million consumers across 28 countries. There are over 400 producers currently involved in the production of Kampot pepper, and the farm price of their black pepper is US$15 per kg, while non-GI black pepper receives only around US$ 7 per kg. These producers are now estimated to be earning up to 2 times above the country's GNI per capita. This success story has encouraged many farmers in surrounding areas to look towards sustainable and organic production.

175 Building on these experiences, the project's PSPP model will harness market incentives, technologies, social and political institutions, and public and private investments to achieve its goal. Throughout the project implementation, this model will be iteratively improved. As part of the project's exit strategy, replication of the approach will be ensured that the direct beneficiaries and private and public sector partners can scale up the project's capacity development programs and PSPP arrangements within the NTSB and beyond. This will be done, for example, through the business planning and entrepreneurial skills development (with particular focus on youth, women, and other socially excluded minorities), the establishment of FARM Trust Funds, improved extension services, and the expansion of contract farming/direct purchase agreements to support similar processes in other parts of the NTSB and the country.

176 This systematic approach ensures the cost-effectiveness and sustainability of GCF support. The project will also ensure strong national ownership and increased absorption capacity by directly working through the existing national and sub-national mechanisms and institutional arrangements to strengthen their functional and technical capacities. For instance, under the LAMS, the project will coordinate with Cambodia's NFMS for REDD+ and efforts to update the GHG inventory as part of the country's ETF. Through this process, the project will ensure that the investment decision support system and built capacities around it and to deliver co-benefits in women's empowerment and emissions reductions, including through avoided postharvest and food loss, are fully integrated into Cambodia's existing institutional framework and arrangements. This will ensure that the project's outputs will continue to be replicated and scaled up in the post-project phase. This will be matched with an effort to promote active stakeholder participation in decision-making through the project activities to build trust and strategic partnerships between the state and non-state actors and the public and private sectors. These multi-level efforts will ensure that the project's results and impacts are maintained by stakeholders and their strategic partnerships beyond the project's life.

C. FINANCING INFORMATION

C.1. Total financing

(a) Requested GCF funding (i + ii + iii + iv + v + vi + vii)	**Total amount**			**Currency**		
	36.232			million USD ($)		
GCF financial instrument	**Amount**		**Tenor**	**Grace period**		**Pricing**
(vi) Grants	36.232					
(b) Co-financing information	**Total amount**			**Currency**		
	6.618			million USD ($)		
Name of institution	**Financial instrument**	**Amount**	**Currency**	**Tenor & grace**	**Pricing**	**Seniority**
MAFF	In kind	3.690	million USD ($)	Enter years Enter years	Enter%	Options
MOE	In kind	2.258	million USD ($)	Enter years Enter years	Enter%	Options
FAO	In kind	0.670	million USD ($)	Enter years Enter years	Enter%	Options
(c) Total financing (c) = (a)+(b)	**Amount**			**Currency**		
	42,850,231			million USD ($)		
(d) Other financing arrangements and contributions (max. 250 words, approximately 0.5 page)	N/A					

C.2. Financing by component

Outcome	Output	Indicative cost	GCF financing		Co-financing		
		Amount	Amount	Financial Instrument	Amount	Financial Instrument	Name of Institutions
		USD ($)	USD ($)		million USD ($)		
1. Farmers' capacities are enhanced to manage climate impacts and related risks	1.1. Availability and access to agro-meteorological advisory services tailored to target value chains improved.	3,396,366	2,976,366	Grants	0.3	In-kind	MAFF
					0.12	In-kind	FAO
2. Adaptive capacity of smallholder farmers and other local value chain actors, particularly vulnerable women farmers, is increased.	2.1 Premium market access opportunities for cashew, mango, organic rice, and vegetable producers and processors increased.	16,834,115	13.669,115	Grants	2.01	In-kind	MAFF
					1.155	In-kind	MoE
	2.2. Access to technologies for climate-resilient agriculture and value chain development improved.	9,015,495	8,835,495	Grants	0.18	In-kind	MAFF
	2.3. Awareness and knowledge of climate-resilient and sustainable, high-value agriculture increased.	3,101,330	1,920,850	Grants	0.73048	In-kind	MAFF
					0.25	In-kind	MoE
					0.2	In-kind	FAO
	2.4. Improved agro-ecological conditions and connectivity.	4,592,220	3,822,220	Grants	0.42	In-kind	MoE
					0.35	In-kind	FAO
3. Regulatory and institutional frameworks and capacities for climate-resilient agricultural certification, cross-sectoral coordination for increased PSPPs and smallholder financing, and climate-informed investment support are strengthened.	3.1. Regulatory and institutional arrangements and capacity relevant to developing certification-based value chains strengthened.	1,509,525	1,160,795	Grants	0.215	In-kind	MAFF
					0.13373	In-kind	MoE
	3.2. Gender-responsive landscape-level agroecology monitoring system (LAMS) developed.	1,294,710	1,069,710	Grants	0.225	In-kind	MoE
M&E		1,065,980	1,065,980	Grants			
PMC		2,040,490	1,711,450	Grants	0.25452	In-kind	MAFF
					0.07452	In-kind	MoE
Total cost (USD)		42,850,231		36,231,981			6,618. 250

C.3 Capacity building and technology development/transfer (max. 250 words, approximately 0.5 page)

C.3.1 Does GCF funding finance capacity building activities?	Yes ☒ No ☐
C.3.2. Does GCF funding finance technology development/transfer?	Yes ☒ No ☐

177 Several categories of capacity development activities will take place, including:

- Agrometeorological information production, dissemination, and application;
- Climate-resilient and high-value business planning and development;
- Establishment of FARM Trust Funds and revenue management;
- Promotion and adoption of climate-resilient and high-value practices and technologies;

- Integrated watershed management;
- Intersectoral coordination for improved regulatory and institutional environments and private sector engagement; and
- Strategic investment decision support mechanism for climate-resilient agriculture.

178 Each category targets a different group of beneficiaries, including:

- Meteorological services,
- Farmers and other local value chain actors, ACs, FAs, PGs, and unions,
- Extension services, including extension officers from PDAFF, PDoWRAM, PDoC, PCDM and district administration, commune and village extension agents, and private extension providers, including NGOs,
- retailers, hoteliers, restauranteurs, and traders/exporters,
- CPAs and CFs, and
- Ministries and their sub-national departments. Nearly 80% of the requested GCF grant will be directed to supporting the capacity development of these beneficiary groups.

179 The remaining 20% will directly assist in acquiring and transferring climate-resilient technologies for the beneficiary groups through the above-indicated capacity development activities.

D. EXPECTED PERFORMANCE AGAINST INVESTMENT CRITERIA

This section refers to the performance of the project/programme against the investment criteria as set out in the GCF's Initial Investment Framework.

D.1. Impact potential (max. 500 words, approximately 1 page)

180 The beneficiaries of the PEARL project are smallholder farmers and other local value chain actors, including ID poor farmers, women, and other minority groups, in the target areas of the NTSB and private sector actors involved in the target value chains. The beneficiaries are categorized into two groups– direct and indirect.

181 Based on stakeholder consultations during the project design phase, combined with the projections of climate change impacts and demographic factors underlying particular socioeconomic vulnerabilities, the project will target 24 districts in the northern sections of the NTSB (see the maps in Annex 16) with relatively well-kept agroecological conditions and predominantly small-scale agricultural practices due to its geography and topography. Their remoteness and relatively hilly topography make large-scale commercialization, mechanization, and intensification challenging and costly. Despite these limitations, these districts are also located along national and provincial roads, which offer significant potential to increase smallholder farmers' market access through this approach (see Annex 16 - maps).

182 In these sections of the NTSB, many smallholder farmers in these areas produce cashew, mango, organic rice, and vegetables in relatively small quantities with minimal to no agrochemical input (Burn et al., 2018; ICEM, 2020). Therefore, premium market segments that value quality over quantity can most effectively harness their growing capacity to produce cashew, mango, organic rice, and leafy vegetables to instigate transformational change towards climate-resilient agriculture.

183 As shown in Table 13, according to the most recent agricultural census (NIS, 2019), approximately 590,000 individuals (48% women) practice farming as their primary livelihood activity in these 24 target districts. About 85% of these farmers are involved in rice production, while the remaining 15% produce perennial and other crops, including vegetables, as their primary crops. Approximately 150 officially registered AC, FAs, PGs, and agricultural unions are currently active in the project's target districts. The project targets roughly 25% of these farmers (135,000) to adopt climate-resilient and high-value agricultural practices through climate-resilient value chain development through Outcome 2. Under Outcome 1, approximately 75% of these farmers (450,000) will benefit from improved access to crop-specific agrometeorological advisory services.

184 Additionally, based on the areas identified for the IWM activities under Output 2.4, derived from the recent restoration potential study (2018), the project targets roughly 8 to 10 % of the immediate downstream farmers (ca. 50,000) as direct beneficiaries of improved agroecological conditions while noting the overall benefit of enhanced ecosystem services to a more significant number of beneficiaries along the waterways. In determining these target figures, the project development team consulted with the past and ongoing agricultural support projects of FAO and other development partners in the country, to identify the project's potential outreach capacity from the operational and financial standpoints.

185 These target areas and figures, combined with the selection of target crops, were validated through the national stakeholder validation workshop (Annex 7). The sensitivity analysis under the economic and financial analysis (Annex 3) indicates that the project must directly benefit at least 157,988 farmers to maintain its positive investment return, and this confirms the robustness of the project's direct beneficiary targets.

186 In total, 450,000 beneficiaries will directly benefit from improved agrometeorological information, training/extension services, and other last-mile services to increase their resilience to climate change. Within this group of beneficiaries, smaller groups (see Table 14) will receive highly tailored capacity support to improve their crop-specific application of agrometeorological information and advisory services, access premium markets, finance, and climate-resilient, and high-value technologies, and benefit from restored ecosystem services in upper catchment areas, and improved downstream agroecology.

Table 13 Demographic Profile of 24 Target Districts

Prov.	Admi level	Name (Latin)	Total Population	# Women	% of Women	# HH	# Women-headed HH	# people in agriculture	# men with agriculture	# women with agriculture	# farmers with rice farming as main livelihood activities	# men with rice farming as major livelihood activities	# women with rice farming as major livelihood activities	# farmers with vegetable farming as main livelihood activities	# men with vegetable farming as major livelihood activities	# women with vegetable farming as major livelihood activities	# farmers growing perennial crops as major livelihood activities
KT	District	Kampong Svay	107,593.00	54,736.00	51%	24,452.95	7,936.72	39,343.34	20,286.00	19,627.00	32,978.93	18,954.00	18,517.00	610.20	384.00	445.00	2,229.92
KT	Town	Stueng Saen	59,044.00	30,392.00	51%	13,419.09	4,406.84	21,590.51	7,116.00	5,064.00	18,097.91	6,398.00	4,613.00	334.86	307.00	212.00	1,223.72
KT	District	Prasat Ballangk	61,823.00	30,802.00	50%	14,050.68	4,466.29	22,606.70	11,986.00	11,611.00	18,949.71	11,473.00	11,228.00	350.62	98.00	107.00	1,281.32
KT	District	Prasat Sambour	49,804.00	25,383.00	51%	11,319.09	3,680.54	18,211.74	10,556.00	10,482.00	15,265.70	9,527.00	9,658.00	282.46	111.00	136.00	1,032.22
KT	District	Soudan	63,304.00	32,081.00	51%	14,387.27	4,651.75	23,148.26	12,987.00	14,159.00	19,403.66	10,047.00	11,212.00	359.02	101.00	74.00	1,312.01
KT	District	Suntuk	113,649.00	54,222.00	48%	25,829.32	7,862.19	41,557.82	20,525.00	18,867.00	34,835.19	18,102.00	16,680.00	644.54	374.00	246.00	2,355.44
PV	District	Chey Saen	26,387.00	13,651.00	52%	5,863.78	1,801.93	10,658.23	5,482.00	5,365.00	7,834.62	4,913.00	4,791.00	234.10	147.00	145.00	969.47
PV	District	Chhuch	24,354.00	12,085.00	50%	5,412.00	1,595.22	9,837.06	4,067.00	4,196.00	7,230.99	3,542.00	3,722.00	216.06	83.00	80.00	894.78
PV	District	Choam Ksant	58,500.00	30,171.00	52%	13,000.00	3,982.57	23,629.30	7,242.00	8,155.00	17,369.35	6,293.00	7,373.00	518.99	196.00	132.00	2,149.33
PV	District	Kuleaen	33,990.00	17,026.00	50%	7,553.33	2,247.43	13,729.23	7,008.00	6,390.00	10,092.04	5,457.00	4,980.00	301.55	139.00	158.00	1,248.81
PV	District	Rovieng	47,574.00	24,420.00	51%	10,572.00	3,223.44	19,216.07	9,091.00	8,748.00	14,175.29	7,076.00	6,586.00	422.06	164.00	148.00	1,747.90
PV	District	Sangkum Thmei	21,197.00	10,720.00	51%	4,710.44	1,415.04	8,561.88	5,235.00	4,748.00	6,293.64	4,455.00	4,085.00	188.05	11.00	6.00	778.79
PV	District	Thueng Meas Chey	11,418.00	5,904.00	52%	2,537.33	779.33	4,611.95	2,828.00	2,251.00	3,390.14	2,091.00	1,667.00	101.30	60.00	46.00	419.50
PV	Town	Preah Vihear	22,983.00	11,894.00	52%	5,107.33	1,570.01	9,283.28	2,160.00	2,054.00	6,823.93	811.00	793.00	203.90	101.00	91.00	844.41
SR	District	Banteay Srei	44,781.00	22,583.00	50%	9,735.00	2,890.62	14,583.95	8,333.00	8,728.00	12,689.40	6,867.00	7,449.00	318.58	376.00	467.00	221.40
SR	District	Chi Kraeng	151,163.00	76,845.00	51%	32,861.52	9,836.16	49,229.66	27,127.00	23,770.00	42,834.40	25,112.00	21,762.00	1,075.41	638.00	605.00	747.37
SR	District	Prasat Bakong	82,214.00	41,903.00	51%	17,872.61	5,363.58	26,774.85	11,930.00	11,235.00	23,296.62	10,860.00	10,062.00	584.89	498.00	578.00	406.48
SR	Town	Siem Reap	250,798.00	12,890.00	5%	54,521.30	1,649.92	81,678.05	13,256.00	11,463.00	71,067.53	11,471.00	9,763.00	1,784.24	1,030.00	1,139.00	1,239.98
SR	District	Soutr Nikom	117,186.00	59,427.00	51%	25,475.22	7,606.66	38,164.28	21,073.00	21,034.00	33,206.48	20,007.00	200,023.00	833.69	505.00	494.00	579.38
SR	District	Svay Leu	44,092.00	21,802.00	49%	9,585.22	2,790.66	14,359.56	8,675.00	7,069.00	12,494.16	6,813.00	5,754.00	313.68	107.00	87.00	218.00
OM	District	Anlong Veaeng	50,441.00	24,856.00	49%	10,965.43	2,435.89	22,092.29	8,498.00	7,640.00	22,092.29	7,117.00	6,641.00	140.15	104.00	109.00	461.95
OM	District	Banteay Ampil	52,333.00	25,653.00	49%	11,376.74	2,513.99	22,920.95	12,511.00	12,239.00	22,920.95	11,212.00	11,168.00	145.40	63.00	37.00	479.28
OM	Town	Samraong	65,803.00	22,141.00	34%	14,305.00	2,169.82	28,820.58	11,912.00	10,603.00	28,820.58	10,915.00	9,766.00	182.83	149.00	129.00	602.64
OM	District	Trapeang Prasat	59,281.00	29,279.00	49%	12,887.17	2,869.34	25,964.06	13,460.00	14,436.00	25,964.06	12,729.00	13,824.00	164.71	104.00	86.00	542.91
			1,619,712.00	690,866.00	48%	357,799.85	89,745.93	590,573.58	263,344.00	249,934.00	508,077.57	232,242.00	402,117.00	10,311.30	5,850.00	5,757.00	23,987.02

Table 14 Summary of Direct Beneficiaries

Number of Beneficiaries	Direct Beneficiary Type	Benefit Description
450,000	Smallholder farmers in the target districts	Improved access to tailored agrometeorological advisory services to reduce agricultural loss due to climate change;
135,000[22]	Smallholder farmers and other local value chain actors, including local SMEs, involved in the target value chains in the target districts	Improved market and financial and technological access and accelerated support for adopting climate-resilient and high-value practices and technologies;
50,000[23]	Downstream farmers in the target districts.	Improved ecosystem services, agroecology, and 20 CPAs/CFs with improved livelihood options through restoration and protection of catchment.

[22] This is part of the 450,000 total direct beneficiaries.
[23] This is part of the 450,000 total direct beneficiaries.

Table 15 Demographic Profile of NTSB

	All	% Women
Total Area (hectares)	2,500,000	
Total Population	3,793,793	44%
% of ID poor population	15%	n/a
# of Households	833,029	23%
% of ID poor households	15%	not available
# of people in agriculture	1,355,336	37%
% of rice farmers	87%	45%
% of perennial crop farmers	3%	n/a
% of vegetable farmers	2%	39%
# of registered ACs	306.00	n/a

187 The project also targets roughly 25% of the NTSB's population (1,000,000) who are primarily dependent on agriculture as their primary livelihood activity (Table 15) as its indirect beneficiaries. The project defines them as a beneficiary group that is not directly targeted by the project, and this group is thus not involved in the target value chains in the 24 districts of the NTSB. These indirect beneficiaries will benefit from the project by having general access to improved agrometeorological information and increased exposure and awareness of alternative practices and technologies through peer-to-peer learning, demonstration sites, extension services, social media platforms, and mobile apps. In addition, private sector actors, including agricultural suppliers, collectors, traders/exporters, retailers, hoteliers, and restauranteurs, playing critical roles in providing agricultural extension services, developing market opportunities, and promoting climate-resilient and high-value practices, as well as consumers, will benefit from increased supply and sourcing capacities for climate-resilient and sustainable products and related investment opportunities. For the private sector actors and consumers, the project cannot at this point estimate its target beneficiary figures; however, at the inception stage and during the implementation, the project will conduct several surveys to measure and report its impact on these beneficiary groups.

188 Delivering these benefits to the project's direct and indirect beneficiaries contribute to the three GCF Result Areas: ARA1 Most vulnerable people and communities; ARA 2 Health, well-being, food and water security; and ARA 4 Ecosystems and ecosystem services, as described further in Section E.3.

D.2. Paradigm shift potential (max. 500 words, approximately 1 page)

189 The project will focus on creating enabling conditions through market-based mechanisms based on PSPPs to support a smooth and timely transition to climate-adapted, high-value, and sustainable agriculture. This will facilitate transformational change that builds on cost-effective and strategic investments to increase the sector's overall climate resilience and sustainability. The increased market access and opportunities created under Outcome 2 through market-based mechanisms will strengthen the rationale for farmers and other local value chain actors to adopt climate-resilient, sustainable, and higher-value agricultural practices. Regulatory and institutional enabling conditions under Outcome 3 ensure the sustainability of the GCF investment at the systemic level well beyond the project's life. These market-led incentives and enabling conditions provide the project's beneficiary farmers and other local value chain actors practical avenues to address climate-related risks, which have been illuminated under Outcome 1.

190 The project will catalyze impact beyond its one-off investment by supporting its beneficiaries in improving access to climate information, business, market and extension knowledge, finance, and technologies. The accelerated adoption of climate-resilient and high-value practices and technologies will enable the project beneficiaries involved in cashew, mango, organic rice, and vegetable value chains to access premium price markets to increase their farm income, resulting in their increased adaptive capacity at the household and community levels. As their remoteness and topographical features limit further mechanization and industrialization, this approach to target certified premium market expansion is considered highly relevant to the northern sections of the NTSB, where these exact features have generally kept their farming practices small scale and relatively less dependent on machinery and chemical inputs. The approach will also benefit the private sector actors, leading the development of sustainable value chains based on the target crops by increasing their supply capacity and business expansion opportunities.

191 These increased opportunities for the targeted smallholder farmers, other local value chain actors, and private sector champions will form enabling conditions for effective PSPPs. Such conditions will also increase private and public investment in the target value chains to ensure the GCF investment's scalability, replicability, and sustainability through this project.

192 The project will instigate transformational change in the NTSB through the following six mechanisms. The market-driven/linked nature of these mechanisms make them highly scalable and replicable within the NTSB and beyond.

- Improved agrometeorological advisory services and their outreach capacity;
- Business and financial literacy development and climate-resilient and high-value business planning;
- An innovative climate adaptation asset acquisition mechanism (i.e., FARM) for smallholder farmers and other local value chain actors with limited access to finance for adopting climate-resilient measures, which also promote high-value practices;
- Awareness-raising, knowledge management and demonstration of appropriate farming and value-addition techniques and technologies;
- Integrated watershed management for improved ecosystems resilience and agroecology;
- An enabling environment for enhanced access to agricultural finance, PSPPs, and systematically leveraging private and public investment for climate-resilient agriculture (i.e., LAMS).

D.3. Sustainable development (max. 500 words, approximately 1 page)

193 The project is expected to build stronger and closer relationships between climate resilience, sustainable agriculture, sound environmental management, and rural poverty alleviation, providing a fundamental base for sustainable development in Cambodia. Such efforts will produce several additional benefits, contributing directly to Cambodia's Sustainable Development Goals (2018a).

194 The project's beneficiaries will be provided with the services and capacities needed to sustainably increase their food production capacity and income generation opportunities along the targeted value chains. The catchment restoration and protection will enhance ecosystem services and agroecological conditions at the landscape level. The integrated climate-resilience practices and technologies will also ensure soil enrichment, efficient water management, and reduced harmful pesticide and agrochemical use. The project will also generate critical gender benefits, mainly through supporting female vegetable producers and female-headed households in diversification efforts, introducing time-saving technologies, providing tailored capacity building support and addressing labor shortages due to labor migration.

195 These additional benefits specifically support Cambodia's Sustainable Development Goal 1 (no poverty), Goal 2 (zero hunger), Goal 5 (gender equality), and Goal 15 (life on land).

D.4. Needs of recipient (max. 500 words, approximately 1 page)

196 NTSB is home to 20% of the country's population, and the majority of them are engaged in agriculture. Roughly 15 % of the country's households below the poverty line are in the NTSB, with Oddar Meanchey and Preah Vihear among the country's poorest provinces (RGC, 2014, 2020b).

197 Labor migration by men to urban areas and abroad is widespread in the northern sections of the NTSB. The number of female-headed households in all four provinces has increased significantly in recent decades, and the trend has been particularly noticeable in the two northern provinces (RGC, 2014, 2018b). Many female-headed households have shifted to vegetable production to cope with labor shortages.

198 The RGC's commitment to addressing climate-related challenges, described in its NDC, CCCSP, and sectoral CC(P)APs, has also been well demonstrated through mostly public spending. In 2014 alone, over US$ 200 million were allocated by the RGC to address climate-related challenges (MoEF, 2016). The private-sector investments in climate change-related activities during 2009 – 2011 were worth US$ 185 million, although mainly going to mitigation areas. These figures have since increased steadily in agriculture-related sectors to indicate growing commitments and interests from the public and private sectors.

199 Despite these increasing interests and commitments, the climate-related spending of the MAFF accumulatively accounts for less than 50% of the US$ 246.20 million required for the full implementation of its CCPAP (MoEF, 2016). The sources of finance for the CCPAP include the Secretariat Working Group on Agriculture, Forestry and Fisheries (SCAFF), government annual budget allocation, loans and grants from the World Bank, ADB, and IFAD (ibid.). Although various climate change funds mobilized through the UN and bilateral agencies also provide additional support, much more is still needed to close the current financial gap. Much of the existing support has focused on policy-level capacity development and framework building (i.e., NAP process, REDD+, general early warning) at the national level. Despite the NTSB's critical role in agriculture and its notable vulnerability to climate change, the existing support in the NTSB is mainly focused on agricultural productivity and poverty alleviation or site-specific climate adaptation on a pilot basis without adequate coordination and mechanisms for scaling up best practices (see Annex 2 for more details).

200 Meanwhile, organic aromatic rice, cashew, mango, and vegetables have emerged as alternative agricultural commodities in the NTSB with the potential to access premium price markets through meeting quality control and food safety standards (Burn et al., 2018; ICEM, 2020). While the production of these crops needs climate change adaptation, as discussed under Section B.1 and Annex 2, these emerging markets offer practical opportunities to incentivize these vulnerable smallholder farmers and other local value chain actors to adopt climate-resilient practices and technologies and improve their livelihoods, thus increasing their overall adaptive capacity. There is an increasing interest among smallholder farmers and other local value chain actors to access such markets.

201 However, the current production practices of these farmers and other local value chain actors are considered low quality and low value; therefore, their access to these markets is limited without the proposed technical and financial support under the PEARL project to remove the current barriers at systemic, institutional and individual levels, as described under Section B.2. From this perspective, the proposed project is paradigm-shifting, sustainable and local demand-driven as it harnesses the current market trends to address the sector's vulnerability to climate change.

D.5. Country ownership (max. 500 words, approximately 1 page)

Brief Description of FAO, MAFF and MoE

202 FAO is a specialized agency of the United Nations with the mandate to improve food security, nutrition, and agricultural productivity and reduce rural poverty. FAO is a leading global institution with highly technical expertise and knowledge in several critical sectors concerning its operational mandate. FAO demonstrates a solid commitment to meeting the 2030 Agenda for Sustainable Development through the transformation to more efficient, inclusive, resilient, and sustainable agri-food systems for better production, nutrition, environment, and life, leaving no one behind.

203 FAO has supported Cambodia since 1979 in agricultural production, value chain development, market access, climate change adaptation and mitigation, sustainable management of natural resources (forestry and fisheries), irrigation, animal health and production, food security and nutrition, and food safety. FAO's work has spanned the entire country and has extensive experience designing and implementing projects in the NTSB. The overarching goal of FAO's programme in Cambodia is to contribute to eradicating poverty, food insecurity, and malnutrition and sustainable management and use of the country's natural resources. FAO has laid a strong partnership and strategically aligned with the RGC counterparts to deliver needed services that contribute to the advancement of Cambodian agriculture, food security and nutrition, sustainable management of natural resources, and climate resilience.

204 The two Co-EEs of the project are the MAFF and MoE. The MAFF was established in 1996 with the mandate to lead and administer Cambodia's agriculture, forestry, and fisheries sectors. The MoE was also established in 1996 with the mandate to coordinate the environmental affairs in Cambodia. The MoE is Cambodia’s focal institution for the Rio Conventions and the NDA for the GCF.

Country Ownership

205 The PEARL project is identified as the number one priority adaptation project under Cambodia's GCF Country Programme (2020a), drawing on its NDC, NAPA, NAP process, CCCSP, and sectoral climate change action plans. Cambodia's NDA and other vital stakeholders recognize the urgent adaptation challenges facing the country's agriculture sector. Ensuring the sector's climate resilience in critical agricultural regions, including the NTSB, is a priority. In this respect, establishing effective PPPs to unlock private finance for adaptation actions is essential under the Country Programme.

206 The NDA looks to the PEARL project to lay the necessary foundation for strategically directing public spending to fill the existing capacity gaps in enabling conditions to increase the number of bankable projects for private investment and guide such resources to deliver incremental results. As part of this foundation building for value-chain-led agriculture adaptation, the PEARL project will strengthen the technical and operational capacity of the ARDB to play a leadership role in agricultural finance, supporting smallholder farmers and small-scale local value chain actors. The ARDB is expected to continue advancing the area of agricultural finance to accelerate the transition to climate-resilient and high-value agriculture in the NTSB and beyond after the project completion.

207 In this context, the PEARL project has been prepared under the strong leadership of the NDA and full and active engagement by relevant national and local government and NGO partners, including the MAFF, MoE, MWRM, and their sub-national departments, ARDB, GRET, IRAM, and WCS. Also, national and local private sector actors representing SMEs, traders/exporters, microfinance institutions, insurance providers, input suppliers, and retailers have

been actively engaged in the project's design. More than two dozen ACs, FAs, PGs, CPAs, FAs, and unions were consulted extensively to reflect their views and accurately target their needs (see Annex 7).

208 During the project implementation, the NDA will ensure effective coordination between the PEARL and another GCF-funded CAVS project, led by the ADB, as the two projects comprise integral components of Cambodia's harmonized response to climate change in the agriculture sector, guided by its NDC and CCCSP. Also, under this overarching framework of action, the MoE, the focal institution for the Global Environment Facility (GEF) together with FAO, ensures the complementarity of the PEARL and FAO-led LDCF projects to deliver extended results at the landscape level around the Tonle Sap Lake.

D.6. Efficiency and effectiveness (max`. 500 words, approximately 1 page)

209 The project builds on existing best practices and baseline and parallel investments (see Table 3 and Annex 2) to deliver incremental impacts. The project is efficient and effective as a GCF grant investment, as argued below, and has a high likelihood of success and replication through the six mechanisms of transformation described under Section D.2. One of such mechanisms is the FARM, which is expected to deliver more than three times the initial investment value (i.e., USD 7 million) for supporting the project's beneficiaries over the project's lifetime. The other mechanisms will also generate the information, capacities (at both the farm and community levels), market incentives, and conducive enabling environment needed to crowd-in additional climate-oriented private investment along and beyond the targeted value chains.

210 Macroeconomic impact analysis of the project (Mazzoli and Branca, 2022) (Annex 3) suggests that the project will have economic impacts on several levels, including Cambodia's GDP, household and government incomes, and per capita consumption and value-added. The PEARL project is expected to benefit mainly rural but also urban households through increased climate resilience of the target value chains and supply of safe and quality food while also lowering the prices of agricultural products. The cumulative impact of the project's intervention over its life on the country's economy is estimated at USD 53 million, with a multiplier effect of 1.38 for every dollar spent. Out of the total value created, USD 50.74 million is linked to the project's direct and indirect sectoral stimulus. An additional USD 2.20 million is associated with incremental tax revenues for the government, thus indicating the project's **GDP contribution of 0.04% annually and 0.23 % over the implementation period**.

211 This macroeconomic projection is predicated on the project's focus on investing in enabling conditions. From this perspective, the requested GCF grant financing is necessary given the non-bankability of the proposed interventions to establish critical enabling capacities and conditions to leverage increased investments from the public and private sectors into the areas crucial for climate-resilient, high-value and inclusive agriculture.

212 An economic and financial analysis (EFA) (Branca and Mazzoli, 2022) (Annex 3) confirms the viability and robustness of the project from both economic and financial perspectives. Financially, the project is expected to increase its target beneficiaries' average household annual income by 28% compared to the scenario without the project based on a conservative estimate. In socioeconomic terms, the diffusion of information, knowledge, skills, and investments through the project activities will generally strengthen local economies, resulting in improved living standards and increased local demand and decent employment opportunities, particularly for women and other minority groups. Furthermore, expanding the project's target value chains will also promote the development of related service sectors, thus increasing demand for goods and services in general. These broader impacts will reduce rural-urban migration by offering jobs with decent wages and local entrepreneurial opportunities, particularly for young generations.

213 More specifically, the EFA (ibid.) suggests the project's aggregate **Financial Internal Rate of Return (FIRR) of 38.7%, and overall Economic Internal rate of Return (EIRR) of 45.8%**, based on the assumption that 60% of the target beneficiaries will have successfully adopted the climate-resilient and high-value practices and technologies as a result of the project, and economic benefit parameters limited at farm-gate. Thus, the EIRR gives a conservative estimate. At the discount rate of 5%, **the base economic net present value (NPV) of the project is US$ 84 million over the 20 year impact period**. The EFA also tested the sensitivity of the EIRR and NPV based on three scenarios – 1) 10 to 20% cost over-run, 2) benefits fluctuations between +20% and -20%, and 3) benefit delays of 1 to 2 years. The results (Table 16) show the robustness of the project under all scenarios and the minimum number of direct beneficiaries of 157,988 farmers (i.e., an adoption rate of 31%), until which point the project maintains a positive NPV (break-even point).

Table 16: Results of the economic and sensitivity analysis

Performance indicators	Base case	Cost increments		Benefits increments		Benefits decrease		Benefits delay	
		+10%	+20%	+10%	+20%	-10%	-20%	1 year	2 year
EIRR	**45.8%**	40.0%	35.4%	52.4%	59.3%	39.5%	33.4%	31.1%	38.1%
NPV @ 5% (000 $)	**84,083**	44,834	41,966	55,338	62,975	40,063	32,426	39,311	45,567

Break-even point (adoption rate)	
Minimum number of beneficiaries to have a positive NPV (HH)	157,988
Corresponding adoption rate (%)	31.3%

214 In addition, the project will demonstrate effective coordination and complementarity between GCF and GEF finance through the proposed integrated approach between the PEARL and FAO-led LDCF projects at the landscape level. Although the level of co-finance and volume of funds directly leveraged by the project are and will be modest, the broader contributions of the project to unlocking additional investment in climate-resilient agriculture in the NTSB and beyond in the medium to long-term will be significant, as discussed above.

215 The project interventions are vertically and horizontally interlinked through the integrated landscape and value-chain approaches to address the critical challenges associated with climate vulnerability in the NTSB. Building a greater understanding and awareness of their interdependency through the integrated approaches is expected to galvanize the NTSB's current agriculture and environmental management practices to shift towards a climate-resilient and sustainable path.

E. LOGICAL FRAMEWORK

E.1. Project/Programme Focus

☐ Reduced emissions (mitigation)

☒ Increased resilience (adaptation)

E.2. GCF Impact level: Paradigm shift potential (max 600 words, approximately 1-2 pages)

216 Further to the paradigm shifting potential of the project described under Section D.2, the improved agrometeorological advisory services and establishment of climate-resilient, high-value and sustainable market practices are expected to permeate the sector across the NTSB through co-financing efforts of EEs and Procured Parties and activities of parallel funding projects. Such effects will directly scale up and replicate the project impacts to benefit farmers and value chain actors in other parts of the country and consumers through increased food security and quality. The project's scalability, replicability and sustainability potentials are discussed below.

Assessment Dimension	Current state (baseline)		Potential target scenario (Description)	How the project/programme will contribute (Description)
	Description	Rating		
Scale	Current meteorological forecasting and advisory services are not tailored for agricultural use to address the vulnerability of farmers and other local value chain actors to climate change. Also, systematic efforts to capture, analyze, disseminate and demonstrate best practices and lessons learned are limited to hinder the progress of farmers and other local value chain actors' adoption of climate-resilient and high-value practices and technologies.	Medium	**Increased availability and accessibility to crop-specific climate information and risk mitigation strategies can quickly scale up** climate-informed farming, risk awareness, and adaptive options. Farmers and other value chain actors in the NTSB and Cambodia have access to and regularly apply crop-specific agrometeorological advisory information, made accessible through various mediums to take early actions to minimize their loss and damage and increase their productivity by taking adaptive actions. There is also a systematic effort to promote proven adaptive practices and technologies through various mediums at farm and landscape levels to lead their increased awareness of climate risks into action.	The project will contribute to realizing this target scenario through: • Component/Outcome 1: Improved agrometeorological advisory services and their outreach capacity. • Component/Outcome 2: knowledge management and demonstration of appropriate farming and value-addition technologies and technologies; and integrated watershed management for improved ecosystems resilience and agroecology (see E 5 below).
Replicability	Presently, smallholder farmers and other local value chain actors, particularly women farmers and value chain actors, have limited access to high-value markets that could offer significant opportunities for improving their adaptive capacity due to a lack of public and private sector support and engagement. Unlocking such market opportunities for building the climate resilience of these farmers and value chain actors requires access to market information, extension knowledge, technologies, and especially finance. There are limited financial instruments available to support smallholder farmers and local value	Medium	**Replication based on market-led examples of success** in transitioning to climate-resilient and high-value agriculture provides the most robust business case, as farmers and other value chain actors naturally gravitate towards such trends. Farmers and other value chain actors in the NTSB and Cambodia, facing similar agroecological and socioeconomic limitations, have market-proven examples that provide increased adaptive capacity and livelihood options at the household and community levels. The public and private sectors also strategically invest in these opportunities by providing regulatory and quality control, skills training, and business and market development support. These efforts are coupled with increased access to low-cost finance for farmers and	The project will contribute to realizing this target scenario through: • Under Component/Outcome 2: Business and financial literacy development and climate-resilient and high-value business planning. • Under Component/Outcome 2: An innovative a climate adaptation asset acquisition mechanism (i.e., FARM) for smallholder farmers and other local value chain actors with limited access to finance (see E 5 below)

	chain actors without collateral or guarantor to access the markets.		other value chain actors with limited means to replicate the successful examples.	
Sustainability	There are limited systemic and institutional efforts for smallholder farmers and other local value chain actors, particularly women farmers and value chain actors, to increase their access to the necessary financial resources for transitioning to climate-resilient and high-value agricultural production and processing. Also, coordinated efforts towards planning and monitoring climate investment gaps and agricultural impacts are absent. An integrated decision-support system is needed at the national level to direct public spending on enabling conditions to increase the number of bankable projects for climate-resilient and high-value agriculture to unlock private sector finance to accelerate the transition.	Medium	**Effective cross-sectoral coordination, PSPPs, and adequate and predictable investment ensure sustainability.** Public spending and resource allocations systematically ensure enabling systemic, individual, and institutional conditions to increase the overall bankability of private actors' investments in climate-resilient, high-value and inclusive agriculture. Also, there is a system in place to monitor and report on investment progress and gaps to ensure incremental results across the sector and increase climate finance's overall effectiveness and efficiency from public and private sources.	The project will contribute to realizing this target scenario through: • Under Component/Outcome 3: An enabling environment for improved access to agricultural finance, PSPPs, and systematically leveraging private and public investment for climate-resilient agriculture (i.e., LAMS) (See E 5 below).

E.3. GCF Outcome level: Reduced emissions and increased resilience (IRMF core indicators 1-4, quantitative indicators)

GCF Result Area	IRMF Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions / Note
				Mid-term	Final[24]	
TOTAL (ARA 1 + ARA 2)	Core 2: Direct and indirect beneficiaries reached	• See ARA 1, ARA 2 and Core 6 MoVs	See ARA 1 and ARA 2 baselines	150,000 smallholder farmers, and other local value chain actors 150,000 direct (50% women) 350,000 indirect[25] (50% women)	450,000 smallholder farmers, and other local value chain actors 450,000 direct (50% women) 1,000,000 indirect (50% women)	• See D.1 and Annex 2 for the methodology • See ARA 1, ARA 2 and Core 6 notes
ARA1 Most vulnerable people and communities	Supplementary 2.1: Beneficiaries (female/male) adopting improved and/or new climate-resilient livelihood options	• National Census of Agriculture by National Institute of Statistics (NIS) and MAFF • Qualitative and impact assessment (e.g., key informant	0	150,000 smallholder farmers, and other local value chain actors, particularly women farmers and value chain actors (50% women).	450,000 smallholder farmers, and other local value chain actors, particularly women farmers and value chain actors (50% women).	Assumptions: • Market trends and price advantage within Cambodia and abroad remain favorable. • National and global scale disruptions (e.g., COVID 19) remain minimal. • Effective cross-sectoral coordination and partnerships exist. • Beneficiaries develops increase awareness of climate risks and risk migration measures through tailored agrometeorogical advisory

[24] The final target means the target at the end of project/programme implementation period. However, for core indicator 1 (GHG emission reduction), please also provide the target value at the end of the total lifespan period which is defined as the maximum number of years over which the impacts of the investment are expected to be effective.

[25] Please see Section D1 for the description of the direct and indirect beneficiaries.

		interviews (KIIs) and focus group discussion (FGD))/ quantitative survey by the project				services and adopt climate-resilient and high-value practices and technologies through increased access to finance and technologies through FARM and diversified agricultural livelihoods through alternative value chain development. Note: • Household to individual conversion ratio is 1:4.5 • Average proportion of women farmers in the target district is 48%.
ARA2 Health, well-being, food and water security	Supplementary 2.2: Beneficiaries (female/male) with improved food security	• Food Insecurity Experience Scale (FIES) surveys of the project areas at inception to set a baseline and monitor changes. • National Census of Agriculture by National Institute of Statistics (NIS) and MAFF • Qualitative and impact assessment (e.g., KIIs and FGD/ quantitative survey by the project	The number of food insecure famers (female/male) in the project target districts to be determined at project inception through FIES survey.	150,000 smallholder farmers, and other local value chain actors, particularly women farmers and value chain actors (50% women).	450,000 smallholder farmers, and other local value chain actors, particularly women farmers and value chain actors (50% women).	• Assumptions: • Market trends and price advantage within Cambodia and abroad remain favorable. • National and global scale disruptions (e.g., COVID 19) remain minimal. • Effective cross-sectoral coordination and partnerships exist. • Beneficiaries apply tailored agrometeorological advisory services and increase climate risk awareness and risk mitigation measures to improve their food security. Note: • According to 2019 Agricultural Census, 70,000 to 215,000 households (20-60%) with large interprovincial variability in NTSB experience moderate to severe food shortages due to crop loss and damage on an annual basis. • The mid-term and final targets are subject to change after the baseline FIES survey at inception.
ARA4 Ecosystems and ecosystem services	Supplementary 4.1: Hectares of terrestrial forest, terrestrial non-forest, freshwater and coastal marine areas brought under resoration and/or improved ecosystems	• National Forest Monitoring System (NFMS) by MAFF • National biodiversity database of MoE • Qualitative and impact assessment (e.g., KIIs and FGD/ quantitative survey by the project	0	2,500 hectares of terrestrial tropical rain forest.	7,600 hectares of terrestrial tropical rain forest.	Assumptions: • Effective cross-sectoral and inter-district coordination and partnerships exist. • Strong interest and active participation of CPAs and CFs. • Beneficiary groups (i.e., 16 target CPAs and 4 target CFs) adopt improved catchment forest management and unitarization practices through agroforestry and other livelihood diversification activities. Note: • Weak linkages between upper watershed management and downstream agricultural productivity contribute to downstream farmers' increased vulnerability and exposure to climate-related hazards. Among the highest deforestation rates through cropland expansion in upstream areas affect the quality and availability of water, particularly for organic rice production downstream. There are 20,000 hectares of potential restoration areas across the region under community-protected areas(CPAs)and community forests (CFs).

E.4. GCF Outcome level: Enabling environment (IRMF core indicators 5-8 as applicable)

Core Indicator	Baseline context (description)	Rating for current state (baseline)	Target scenario (description)	How the project will contribute	Coverage
Core Indicator 6: Degree to which GCF investments contribute to technology deployment, dissemination, development or transfer and innovation	• Current meteorological forecasting and advisory services are not tailored or specific to the project's target crops (i.e., cashew, mango, organic rice and leafy vegetables) to address the vulnerability of the target farmers and other local value chain actors to climate change. • Currently, no integrated decision-support system exists at the national level to systematically accelerate the transition towards climate-resilient, inclusive, gender-responsive and high-value agriculture and to crowd in and direct public and private investments into areas that are strategic and relevant.	medium	• Highly tailored and gender-responsive agrometeorological information for cashew, mango, organic rice, and leafy vegetable producers for the target areas is available to reduce the targeted farmers and other value chain actors' climate risks. The information is disseminated through various communication and outreach mediums to overcome information access barriers, particularly for women and other socially excluded minorities. Such mediums include a web platform hosted by MAFF, mobile apps, social media channels, TV and radio programs, community bulletins, community speakers, FFS curricula, and private advisory services through contract farming and input supply sales. • Both public institutions and private sector partners regularly use LAMS for tracking progress and making decisions to prioritize areas for public spending and private investment in the agriculture sector to crowd in investments for climate-resilient, inclusive, gender-responsive, and high-value agriculture and ensure their incremental impact.	• The project will develop tailored and crop-specific agrometeorological advisory information and increase information dissemination capacities under Outcome 1. • The project will develop LAMS under Outcome 3 to aid public and private investment decision-making and crowd in investments in climate-resilient, high-value and sustainable agriculture.	Single sub-national area within a country
Core indicator 7: Degree to which GCF Investments contribute to market development/transformation at the sectoral, local, or national level	• Smallholder farmers and other local value chain actors, particularly women, have limited access to high-value markets that could offer significant opportunities for improving their adaptive capacity due to a lack of strategic support from the public and private sectors. • Financial support mechanisms dedicated to smallholder farmers	low	• Smallholder farmers and other local value chain actors involved in the target crop production and processing are provided with highly targeted, climate-resilient, and gender-responsive certification-based (e.g., CamGap, GI and organic, SRP. W+, ISO 2200, and HACCP) value chain development and strategic capacity support through PSPPs (i.e., regulatory control, input quality control, skills training, contract farming and purchase agreements) to strengthen their adaptive capacity with increased income and enhanced agricultural livelihoods. • Agricultural unions, ACs, FAs, and PGs, including CPAs and CFs in the project target areas receive support for developing	• The project will develop climate-resilient high-value market and value chain development and an innovative a climate adaptation asset acquisition mechanism (i.e., FARM) to increase access to finance, knowledge and technologies in a gender-responsive manner under Component/Outcome 2.	Single sub-national area within a country

	and other local value chain actors(without collateral and/or guarantor) are limited to support their transition to climate-resilient, high-value and sustainable agriculture.		and operationalizing crop-specific and climate-resilient business plans in an inclusive and gender-responsive manner and procuring the technologies and infrastructure assets essential for implementing their business plans under the FARM. The FARM will support each beneficiary group in establishing a trust fund account with a local commercial microfinance bank. Disbursements from the trust fund will be used to advance the beneficiary group's business plan implementation. The beneficiary groups may use the acquired assets and trust fund accounts as group collateral to access financial products and services from commercial banks and insurance providers.		
Core Indicator 5: Degree to which GCF investments contribute to strengthening institutional and regulatory frameworks for low emission climate-resilient development pathways in a country-driven manner	• Current policy, regulatory and institutional framework for the existing certification standards and processes (e.g., CamGap, GI, organic certification, ISO 2200, and HACCP) lack full consideration of climate risks and a systematic approach for a wide-spread application of these standards to support the instigation of transformational change towards climate-resilient, high-value and sustainable agriculture. • Limited institutional support structures for smallholder farmers and other local value chain actors, particularly women, for increasing their access to the necessary financial resources for transitioning to climate-resilient and higher-value agricultural production and processing.	medium	• Regulatory, institutional and sectoral coordination systems are strengthened to ensure enabling conditions - regulatory and institutional arrangements and capacity - to support the integration of climate-resilient practices and technologies into certification programs and promote effective PSPPs for climate-resilient and premium value chain development that includes smallholder farmers and other local value chains. • Public and private financial institutions establish a dedicated loan program with a harmonized application screening process that considers climate resilience and sustainability as crucial eligibility criteria over collateral or/and guarantee to ease financial access for smallholder farmers and other local value chain actors.	The project will ensure the necessary enabling regulatory conditions and institutional arrangements for climate-resilient and high-value agriculture development for smallholder farmers and other value chain actors through climate-adapted certification standards, increased PSPPs, and improved financial access under Outcome 3.	National level (one country)
Core indicator 8: Degree to which GCF investments contribute to effective knowledge generation and learning processes, and use of good practices, methodologies and standards	• No harmonized and centralized system or process exists to capture and share lessons learned and best practices to promote climate-resilient and high-value practices and technologies, which impedes effective knowledge transfer and incremental progress.	low	• Relevant lessons learned and best practices for climate-resilient and high-value agriculture are available and accessible through a clearinghouse that gathers, harmonizes, and consolidates information from various sources using the Internet of Things (IoT) technologies. Lessons learned and best practices are regularly applied by smallholder farmers and other local value chain actors through multiple mediums in an inclusive and gender-responsive manner to incrementally	The project will establish a clearinghouse and develop information gathering, processing, and dissemination capacities to increase knowledge availability, accessibility, replicability, and scalability to support the timely adoption of climate-resilient and high-value practices and technologies under Outcome 2.	National level (one country)

			advance the project beneficiaries' transition to climate-resilient and high-value agriculture.		

E.5. Project/programme specific indicators (project outcomes and outputs)

Project/ programme results (outcomes/ outputs)	Project/ programme specific Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions/ Note
				Mid-term	Final	
Outcome 1: Farmers' capacities are enhanced to manage climate impacts and related risks						
Output 1.1: Availability and access to agrometeorological advisory services tailored to target value chains improved among smallholder farmers and local value chain actors, particularly women farmers and value chain actors.	Number of necessary institutional arrangements and procedures for harmonized production and dissemination of agrometeorological advisory information through crop-specific standard operating procedures (SOPs) involving public and private partners, including extension providers and NGOs.	SOP documents for the target crops, SOP preparation completion report, Pre-and post-intervention (qualitative and quantitative) survey results.	0	SOPs for the four (4) target crops fully developed and agreed upon among public and private partners and partially operational.	Crop-specific agrometeorological information for the four (4) target crops is fully available and accessible through operationalization of SOPs.	• Effective coordination and collaboration exist between relevant ministries and across TWG-AW. • MAFF and MoWRAM continue with their extension capacity strengthening. • Strong interest and support from the private sector are present. Note: • Currently, no crop-specific agrometeorological information is available, and advisory services lack harmonization and are not based on robust data and analysis. The last mile service capacities to disseminate and deliver advisory information are either absent or scarce at best.
	Percentage of targeted smallholder farmers and other local value chain actors regularly accessing and applying the agrometeorological advisory services in farm management and value addition activities.	Pre-and post-intervention (qualitative and quantitative) survey results.	0%	15 % of targeted smallholder farmers and other local value chain actors(50% women).	Over 40 % of targeted smallholder farmers and other local value chain actors(50% women).	• MAFF continues with its extension capacity strengthening. • Targeted beneficiaries are interested and available (especially women and other socially excluded minorities). • Public and private communication infrastructure is available and accessible by most beneficiaries. Note: • Baseline will be updated after the pre-intervention survey.
Outcome 2: Adaptive capacity of smallholder farmers and other local value chain actors, particularly vulnerable women farmers, is increased through market incentives that promote climate-resilient, higher-value, diversified, and sustainable production and processing						

Output 2.1: Premium market access opportunities for cashew, mango, organic rice, and vegetable producers and processors increased through climate-resilient and high-value certification programs (linking to Sub-components 2.2. and 2.3 for financing and technical capacity building).	Number of ACs, FAs, PGs, CPAs, CFs, and agricultural unions supported to prepare and implement crop-specific action/business plans in an inclusive and gender-responsive manner, to access premium price market opportunities based on specific certification programs.	Baseline assessment at inception, developed and updated action/business plans and implementation progress reports.	0	100 ACs, FAs, PGs, CPAs, CFs, and agricultural unions with fully developed action/business plans, and at least 60% of them are fully operational.	124 ACs, FAs, PGs, CPAs, CFs, and agricultural unions with fully developed action/business plans, and at least 95 % of them fully operational.	• Effective coordination and collaboration exist between relevant ministries, sub-national governments, NGOs and private actors. • Strong interest and support from the private sector are present. • Targeted beneficiary groups are interested and have robust governance capacity and active participation of members (especially women and other socially excluded minorities). Note: • Despite the growing premium price market opportunities and their climate change adaptation potential, these opportunities are mainly unavailable to smallholder farmers and other local value chain actors in the NTSB, partly due to their lack of strategic planning and quality control capacity based on market knowledge. • The average membership size of AC, FA, PG, CAP, CF, and union is 150.
	Percentage increase in the number of contract farming arrangements and direct purchase agreements signed with traders/exporters, and local retailers, hoteliers, and restauranteurs increased through action/business plan implementation.	Baseline assessment at inception, contracts and direct purchase agreements, pre- and post-intervention (qualitative and quantitative) survey results.	0%	At least a 15 % increase in contract farming arrangements and direct purchase agreements against the inception baseline.	More than a 30 % increase in contract farming arrangements and direct purchase agreements against the inception baseline.	• Strong interest and support from the private sector are present. Note: • Baseline will be updated after the baseline assessment. • While contract farming and direct purchase agreements are practical tools to increase access to premium price markets, such agreements are, however, primarily absent among mango, cashew and vegetable value chain actors and can also be further expanded among organic rice producers.

Output 2.2: Access to technologies for climate-resilient agriculture and value chain development improved among smallholder farmers and other local value chain actors, particularly women farmers and value chain actors (linking to Sub-component 2.1 to support the business plans of ACs, FAs, PGs, CPAs, CFs and agricultural unions).	Number of ACs, FAs, PGs, CPAs, CFs, and agricultural unions supported through FARM to adopt climate-resilient and high-value technologies and have increased access to finance and agricultural insurance.	Baseline assessment at inception, documentation of procured technologies and infrastructure assets, FARM trust account transaction reports, pre-and post-intervention (qualitative and quantitative) survey results.	0	60 ACs, FAs, PGs, CPAs, CFs, and agricultural unions supported through FARM to acquire technologies/assets and establish trust fund accounts with increased access to lending and insurance.	124 ACs, FAs, PGs, CPAs, CFs, and agricultural unions supported through FARM to acquire technologies/assets and establish trust fund accounts with increased access to lending and insurance.	• FAO's procurement system and operations work effectively. Note: • Despite their climate change adaptation potential, premium price market opportunities are mainly unavailable to smallholder farmers and other local value chain actors in the NTSB, partly due to their limited access to finance to adopt climate-resilient and high-value technologies and risk finance measures. • The average membership size of AC, FA, PG, CAP, CF, and union is 150.
Output 2.3: Awareness and knowledge of climate-resilient and sustainable, high-value agriculture increased among farmers and other local value chain actors, particularly women farmers and value chain actors (linking to Sub-component 2.1 to support the operationalization of business plans by the ACs, FAs, PGs, CPAs, CFs and agricultural unions)	Percentage of targeted smallholder farmers and other local value chain actors with increased knowledge of climate-resilient and high-value farming and processing techniques and successfully incorporated them into their practices.	Baseline assessment at inception, demonstration site monitoring reports, pre-and post-training (qualitative and quantitative) survey results, and uptake monitoring (qualitative and quantitative) reports.	0%	40 % of targeted smallholder farmers and other local value chain actors (50% women) with increased knowledge, and a 20 % increase in the uptake of practices against the inception baseline.	85 % of targeted smallholder farmers and other local value chain actors (50% women) with increased knowledge, and a 60 % increase in the uptake of practices against the inception baseline.	• Effective coordination and collaboration exist between relevant ministries, sub-national governments, NGOs and private actors. Note: • Baseline will be updated after the baseline assessment. • Despite their climate change adaptation potential, premium price market opportunities are mainly unavailable to smallholder farmers and other local value chain actors in the NTSB, partly due to their limited knowledge of climate-resilient and high-value farming and processing techniques and ways to integrate them into their existing practices to increase their resilience and output value.
	Percentage of the climate-resilient and high-value practices promoted through training and demonstration activities tailored to specific needs of female farmers and value chain actors.		0	At least 15 % of promoted practices especially tailored for women farmers and value chain actors against the inception baseline.	Over 25 % of promoted practices especially tailored for women farmers and value chain actors against the inception baseline.	• Targeted beneficiaries are interested and available. Note: • Baseline will be updated after the baseline assessment. • Currently there are no dedicated agricultural extension services cater to women's specific needs, which limits the overall uptake of alternative practices

						considering that nearly 50% of the farmers in the NTSB are women.
Output 2.4: Improved agro-ecological conditions and connectivity	Extent (hectares) of catchment areas protected and restored.	Restoration and protection activity completion reports, forestry inventory/NFMS, biodiversity survey, pre-and post-intervention (qualitative and quantitative) survey results.	0	2,500 hectares of catchment restored and protected by a network of 20 CPAs and CFs	7,600 hectares of catchment restored and protected by a network of 20 CPAs and CFs.	• Effective coordination and collaboration exist between relevant ministries, sub-national governments, and NGOs and communities. Note: • Baseline will be updated after the baseline assessment. • There are no areas subject to landscape-level efforts and mechanisms to restore and protect critical catchment forests and other sensitive ecological zones through a harmonized and systematic approach to support a network of CPAs and CFs to improve catchment functions and downstream agroecological conditions and reduce hazards.
Outcome 3: Regulatory and institutional frameworks and capacities for climate-resilient agricultural certification, cross-sectoral coordination for increased PSPPs and smallholder financing, and climate-informed investment support are strengthened						
Output 3.1: Regulatory and institutional arrangements and capacity relevant to developing certification-based value chains strengthened to provide enabling conditions for adopting climate-resilient, high-value and sustainable agriculture and food security.	Number of certification standards with officially adopted supplementary climate-resilience guidelines/tools, online certification registration /traceability tools) to promote climate-resilient and high-value agriculture based on certifications.	Baseline assessment at inception, officially adopted guidelines and institutional arrangements, official minutes, progress (qualitative and quantitative) reports.	0	Two (2) targeted production-focused certification standards with officially adopted supplementary guidelines/tools, establishing online certification registration, and traceability tools .	Two (2) targeted processing-focused certification standards with officially adopted supplementary guidelines/tools, establishing online certification registration, and traceability tools.	• Effective coordination and collaboration exist between relevant ministries, sub-national governments, NGOs and private actors. Note: • Baseline will be updated after the baseline assessment. • There are not structured efforts by the RGC to harness climate-resilient and high-value agriculture by providing clear procedural guidance to make currently operational certification standards climate-resilient and the application of the guidance and related tools user-friendly to increase private sector support and PSPP opportunities.

	Number of financial institutions adopted a harmonized financial scorecard to consider climate resilience, inclusivity, gender responsiveness, and sustainability as key eligibility criteria in screening loan applications.	Adopted scorecard, signed memorandums of understanding, official minutes, and progress (qualitative and quantitative) reports.	0	At least one (1) commercial bank with memorandums of understanding (MoUs) signed to operationalize the scorecard. .	At least three (3) commercial banks with memorandums of understanding (MoUs) signed to operationalize the scorecard.	• Strong interest and support from the private sector and public institutions are present. Note: • Baseline will be updated after the baseline assessment. • There are no structural efforts to increase public-private partnerships in the agricultural finance sector to systematically increase financial access for smallholder farmers and other local value chain actors, particularly women. The lack of a systematic approach to expanding financial access for these less resourceful agricultural value chain actors hinders the country's transition to climate-resilient and high-value agriculture.
Output 3.2: Gender-responsive landscape-level agroecology monitoring system (LAMS) developed to crowd in public and private investments in climate-resilient, high-value and sustainable agriculture.	Number of LAMS users (e.g., value chain investors, financiers, regulators, and policymakers) regularly applying its information for planning and investment decision-making.	Baseline assessment at inception, uptake monitoring (qualitative and quantitative) survey.	0	1,000 users (50% women) regularly using LAMS for planning and investment decision-making.	2,500 users (50% women) regularly using LAMS for planning and investment decision-making. decision-making.	• Effective coordination and collaboration exist between relevant ministries, sub-national governments, NGOs and private actors. • Strong interest and support from the private sector and public institutions are present. Note: • Baseline will be updated after the baseline assessment. • No integrated decision-support tool/system exists for systematically monitoring climate risks and suitability shifts (integrating Sub-component 1.1), identifying investment gaps and opportunities, and monitoring progress to increase public and private investment in critical areas to accelerate the transition towards climate-resilient, inclusive, gender-responsive, and high-value agriculture. Such information is scarce and challenging to locate to make it non-user-friendly to prevent evidence-based investment planning for climate-resilient agriculture.

Project/programme co-benefit indicators

Co-benefit	Project specific Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions/ Note
				Mid-term	Final	
Agricultural production and processing and agroecological management practices are improved to contribute to GHG emissions reductions.	Number of hectares of forests under sustainable forest management and cropland under enhanced soil management, including postharvest residue management and optimized fertilizer application, reduced volume of chemical fertilizer use, and postharvest loss (Note: Activity data (area) can be used to estimate its emission reduction contribution.).	Baseline assessment at inception, activity completion reports under Outputs 2.1, 2.3 and 2.4, BUR/BTR, NFMS	According to Cambodia's First Biennial Update Report (BUR) (2020), the NTSB was responsible for roughly 30 million tonnes of CO2 emissions (at Tier 2) from forest and other land use and 96,000 tonnes of CH4 emissions (at Tier 1) from aggregate sources from agricultural land in 2016.	2,500 hectares of terrestrial tropical rain forest under sustainable forest management, and 65,000 hectares of cropland under enhanced soil management	7,600 hectares of terrestrial tropical rain forest under sustainable forest management and 135,000 hectares of cropland under enhanced soil management	• Effective coordination and collaboration exist between relevant ministries, sub-national governments, NGOs, and private actors. • Targeted beneficiaries are interested and available (especially women and other socially excluded minorities). Note: • Baseline will be updated after the baseline assessment.
Gender considerations are fully internalized into climate-resilient value chain development practices.	A number of ACs, FAs, PGs, CPAs, CFs, and agricultural unions with business plans that demonstrate specific gender considerations and women's empowerment strategies as part of their climate-resilient value chain development and market access improvement strategies.	Baseline assessment at inception, training completion reports, pre-and post-training survey results, Gender Action Plan progress report, and qualitative and quantitative assessments.	Women farmers and value chain actors are visibly active across the NTSB; however, gender norms remain barriers to accessing the necessary information, technologies, and capacity development opportunities to increase their resilience to climate change based on their specific needs. More women agro-business leaders are needed to unlock opportunities for women farmers and other value chain actors.	At least 50 ACs, FAs, PGs, CPAs, CFs, and agricultural unions.	At least 62 ACs, FAs, PGs, CPAs, CFs, and agricultural unions.	• Effective coordination and collaboration exist between relevant ministries, sub-national governments, NGOs, and private actors. • Targeted beneficiaries are interested and available. Note: • Baseline will be updated after the baseline assessment.

E.6. Project/programme activities and deliverables

Activity	Description	Sub-activities	Deliverables
Activity 1.1.1: Increase the spatial scale of agrometeorological data collection and capacity for data processing to produce enhanced agrometeorological forecasts and advisory services tailored for target value chain crops.	Upgraded agrometeorological data collection and processing capacities will enable an analysis of real-time weather and climate information, seasonal forecasts, historical records, crop parameters, soil moisture and temperatures, and pest and disease characteristics through relevant methodologies to provide crop-specific warnings and advisory services.	Sub-activity 1.1.1.1: Mobilize the TWG-AW, led by MAFF and MoWRAM, with additional experts from other relevant entities, including private sector partners, value chain actors, and cooperative/association/union representatives, to review baseline conditions and capacity and data gaps to validate the priority stations for additional sensor upgrades, strategic locations for adding new agrometeorological stations, and training needs for station managers, data analysts and system administrators.	A report by the expert working group with recommendations on capacity upgrades and personnel training needs and programs.
		Sub-activity 1.1.1.2: Upgrade existing hardware and software at the selected priority stations and data storage and processing locations, and install new agrometeorological stations identified by the expert working group (a private-sector partner/service provider be selected for installation and regular maintenance).	Upgrade and installation completion reports, 12 existing stations upgraded with additional sensors, eight (8) new agrometeorological stations installed.
		Sub-activities 1.1.1.3: Design and roll out an annual training program for station managers, data analysts, and system administrators to improve their capacities to manage and maintain the upgraded and newly installed stations and instruments and data storage and processing facilities and collect and process raw data. (Two international scholarships for outstanding staff members from the training and based on their performance reviews for earning graduate degrees/certificates in hydrometeorology/ agrometeorology.	An annual training program, seven (7) annual training workshops with specific curricula for station managers, data analysts, system administrators over the project lifetime, training completion reports, and 150 station managers, data analysts, and system administrators trained. (Two staff members with graduate degrees/certificates)
Activity 1.1.2: Develop SOPs for the production and dissemination of agrometeorological advisory services and data sharing needs and architecture, targeting cashew, mango, rice, and vegetables through a variety of mediums.	Crop-specific SOPs will allow farmers to grow the target crops and other local value chain actors to anticipate yields and processing volumes with reliable information and consistent advisory services to make the target value chains less vulnerable to climate change. The SOPs will ensure coordination among public and private extension services and provide highly tailored information through multiple mediums. The crop-specific SOPs will be placed under the existing SOP for general hydrometeorological	Sub-activity 1.1.2.1: Mobilize the TWG -AW, led by MAFF and MoWRAM, together with additional stakeholders, including MoC, MoWA, MoE and National Committee for Disaster Management (NCDM), and their provincial, district, and commune counterparts, selected cooperatives, associations and unions and private-sector entities (e.g., private extension providers, including NGOs and media services) to develop the SOPs for the production and dissemination of crop-specific agrometeorological advisory information (e.g., information type, source, and flow channels), including mechanisms to collect feedback from extension providers, farmers and other local value chain actors to improve service quality.	Four (4) SOPs for agrometeorological advisory services and feedback mechanisms for cashew, mango, organic rice, and vegetable producers and processors.
		Sub-activity 1.1.2.2: Establish a central database based on harmonized data management and sharing agreements under the SOPs among relevant institutions and private-sector partners with dedicated information dissemination	Data management and sharing agreements, more than four (4) dedicated information dissemination and outreach channels, including Tonle Sap App, Chamkar and EcoKasksekor, established for public and private

	advisory services, developed by the regional FAO project and the University of Queensland and WMO project, to provide highly tailored information. The SOPs will establish clear crop-specific information parameters, administrative and procedural rules, and processes for producing and disseminating advisories and warnings (e.g., information type, frequency, format, roles, responsibilities, dissemination mediums, quality control measures).	and outreach mediums (e.g., web platform hosted by MAFF, mobile apps (i.e., Tonle Sap App, Chamkar and EcoKasksekor), social media channels, TV and radio programs, community bulletins, community speakers, FFS curricula, and private advisory services through contract farming and input supply sales).	extension providers, including NGOs, farmers, and local value chain actors.
		Sub-activity 1.1.2.3: Conduct annual training of extension officers from PDAFF, PDoWRAM, PDoC, PCDM and district administration, commune and village extension agents, and private extension providers, including NGOs on the SOPs to operationalize harmonized agrometeorological services and collect end-user feedback through dedicated information dissemination and outreach channels.	Training program for public and private extension officers, seven (7) annual training events in each of the four provinces during the project lifetime, training completion reports, 500 public extension officers, and 400 private extension providers, including NGOs trained.
Activity 1.1.3: Increase awareness of agrometeorological advisory services and the benefits of the application in farm management and value addition activities to support decision-making and reduce smallholder farmers and other local value chain actors' vulnerabilities to climate change, particularly women farmers and value chain actors.	Increased awareness of available services and their application among smallholder farmers and other local value chain actors will effectively reduce their climate vulnerabilities in agricultural production and processing. Increased service demand and user feedback will also create an enabling environment for progressively improving service quality and options.	Sub-activity 1.1.3.1: Prepare and roll out TOT curricula, including a feedback mechanism, through FFS to raise awareness of advisory services, including how to access them, and promote the application of agrometeorological advisory services, including market-related advisories among smallholder farmers and other local value chain actors, particularly women farmers and value chain actors.	TOT curricula, including a feedback mechanism, for smallholder farmers and other local value chain actors, training completion reports, and 3,000 smallholder farmers and other local value chain actors trained (ca. 10-15 representatives (40-60% women) per AC, FA, PG, CPA, CF, and union).
		Sub-activity 1.1.3.2: Support peer-to-peer knowledge sharing and training to further promote advisory services among other members of targeted ACs, FAs, PGs, CPAs, CFs, and agricultural unions with their respective TOT-trained representatives.	Peer-to-peer knowledge sharing and training completion reports and an accumulative total of 24,000 farmers and other local value chain actors (40-60% women) supported.
Activity 2.1.1: Develop and operationalize inter-value-chain-actors roadmaps at the provincial level and action/business plans for climate-resilient, inclusive and gender-responsive premium value chain development and identify specific certification programs as key vehicles.	Inclusive and gender-responsive value chain development roadmaps, linking various value chain actors, will establish strategic directions at the provincial level for supporting ACs, FAs, PGs, CPAs, CFs, and agricultural unions in adopting climate-resilient, high-value and sustainable agriculture. Each roadmap will assess and identify appropriate certification programs as essential vehicles for accessing premium price markets. ACs, FAs, PGs, CPAs, CFs, and agricultural unions in the target	Sub-activity 2.1.1.1: Establish an inter-value-chain committee with members from input suppliers, farmers, millers, collectors, traders/exporters, local retailers, hoteliers, restauranteurs, and extension providers, including NGOs to prepare provincial-level roadmaps, including the necessary feasibility studies to identify a target certification program(s) for inclusive, gender-responsive, climate-resilient and high-value value chain development.	Four (4) provincial-level roadmaps developed, including feasibility studies for identifying target certification program(s) and stakeholder validated for operationalization.
		Sub-activity 2.1.1.2: Operationalize the roadmaps by establishing institutional arrangements, product specifications, quality control mechanisms for the selected certification schemes (e.g., CamGap, PGS, GI, SRP and organic for production, and ISO 2200 and HACCP for processing) and marketing tools (e.g., logos, brochures, websites), ensuring legal registration, and conducting training.	Four (4) provincial-level roadmaps fully operational and updated with operational lessons learned.

	districts will prepare their crop-specific action/business plans, guided by their district roadmaps to increase market access. Their business plans will feed into Activity 2.2.1.	Sub-activity 2.1.1.3: Support the provincial-level inter-value-chain committees with focus on ACs, FAs, PGs, CFs, and agricultural unions to carry out branding, marketing (e.g., attending trade fairs, consumer awareness-raising, and brokering purchase agreements) and sourcing and quality control activities.	At least two (2) inter-value-chain brands developed, and branding materials and product specifications.
		Sub-activity 2.1.1.4: Support the provincial-level inter-value-chain committees with focus on CPAs to carry out branding, marketing (e.g., attending trade fairs, consumer awareness-raising, and brokering purchase agreements) and sourcing and quality control activities.	At least one (1) inter-value-chain brands developed, and branding materials and product specifications.
		Sub-activity 2.1.1.5: Conduct annual training of extension providers at the provincial level to operationalize the roadmaps to roll out the roadmaps through FFS curricula and other support programs for smallholder farmers and other local value chain actors, particularly women farmers and value chain actors (e.g., private extension services).	Seven (7) annual training events in each province over the project's lifetime, training materials, training completion reports, 550 public extension officers, 400 private extension providers, including NGOs (40-60% women) trained.
		Sub-activity 2.1.1.6: Assist 78 ACs, FAs, PGs, including up to 2 agricultural unions in preparing crop-specific action plans/business plans to operationalize the provincial-level roadmaps in an inclusive and gender-responsive manner. Action plans/business plans are linked to Commune Development and Investment Plans (CDPs and CIPs).	Total of 78 ACs, FAs, PGs, including up to 2 unions of cooperatives with crop-specific action/business plans, linked to CDPs and CIPs.
		Sub-activity 2.1.1.7: Assist 30 ACs, FAs, and PGs and 4 CFs in preparing crop-specific action plans/business plans to operationalize the provincial-level roadmaps in an inclusive and gender-responsive manner. Action plans/business plans are linked to Commune Development and Investment Plans (CDPs and CIPs).	Total of 30 ACs, FAs and PGs and 4 CFs with crop-specific action/business plans, linked to CDPs and CIPs.
		Sub-activity 2.1.1.8: Assist 16 CPAs in preparing crop-specific action plans/business plans to operationalize the provincial-level roadmaps in an inclusive and gender-responsive manner. Action plans/business plans are linked to Commune Development and Investment Plans (CDPs and CIPs).	Total of 16 CPAs with crop-specific action/business plans, linked to CDPs and CIPs.
		Sub-activity 2.1.1.9: Assist ACs, FAs, PGs, CPAs, CFs in forming crop-specific agricultural unions, where appropriate and strategic, to leverage pooled resources and capacities through action and business planning processes. The project will work with the Preah Vihear Meanchey Union of Agricultural Cooperatives (PMUAC) for organic rice.	Up to three (3) crop-specific agricultural unions (i.e., cashew, mango, and vegetables) established to participate in Sub-activity 2.1.1.4 and FARM under Activity 2.2.1.
		Sub-activity 2.1.1.10: Organize national and provincial annual dialogues between the beneficiary bodies (i.e., ACs, FAs, PGs, CPAs, CFs, and agricultural unions) and direct purchase agreement providers (i.e., traders/exporters,	Dialogue reports, partnership agreements, joint marketing, promotional materials, and a 30% increase in contract farming and direct purchase agreements.

		retailers, hoteliers, and restauranteurs) to establish operational partnerships for market development and implementing crop-specific action/business plans.	
Activity 2.1.2: Develop voluntary add-on supplementary guidelines, tools, and training materials to consider specific climate risks and strategies for the certification programs identified under Activity 2.1.1. (e.g., CamGap, GI and organic for production, and ISO 2200 and HACCP for processing) for the target value chains (linking to Activity 3.1.1. on PLR and institutional arrangements concerning these certification programs).	Climate-proofing of the agricultural certification programs identified in the provincial roadmaps will be crucial for harnessing their market potential for assisting smallholder farmers and other local value chain actors in adopting climate-resilient, high-value, and sustainable agriculture and livelihoods.	Sub-activity 2.1.2.1: Establish a technical working group (TWG) for the certification programs identified in the provincial roadmaps with members from regulatory bodies, independent verifiers, ACs, FAs, PGs, CPAs, CFs, agricultural unions, extension providers, consumer groups, and expert organizations to review and update/develop relevant supplementary guidelines, training materials, and tools to ensure that climate-related risks, climate-resilient approaches, and interventions are fully considered in the certification programs.	TWG, TORs, meeting reports, supplementary guidelines, training manuals, and tools for CamGap, GI, organic certification, and at least one of the food processing standards (i.e., ISO 2200, HACCP).
		Sub-activity 2.1.2.2: Prepare and implement training programs for regulatory and independent verification bodies for operationalizing the voluntary supplementary guidelines, training materials, and tools.	Training materials, training completion reports, 150 individuals trained - regulators (60%) and verifiers (40%).
		Sub-activity 2.1.2.3: Prepare and implement TOT programs for public and private extension providers, including NGOs and representatives of ACs, FAs, PGs, CPAs, CFs, and agricultural unions to operationalize the supplementary guidelines, training materials, and tools through FFS and demonstration activities (Note: public extension providers include PDAFF extension officers, PDoWRM, PDoC and PDoE officers, district administration officers, commune and village extension agents).	Training materials, Training completion reports, 500 public extension officers, 400 private extension providers, including NGOs, 1,000 AC, FA, PG, CPA, CF, and union representatives (8 per body) (40-60% women) trained.
		Sub-activity 2.1.2.4: Explore the possibility of adopting and operationalizing W+ Standards to empower women farmers, particularly in the vegetable sector.	A feasibility report, operational action plan, and awareness and training materials.
Activity 2.2.1: Establish a Farmer-led Agricultural Resilience Mechanism (FARM), for ACs, FAs, PGs, CPAs, CFs, and agricultural unions to assist their members' transition to climate-resilient and high-value agriculture in an inclusive and gender-responsive manner.	An innovative climate adaptation asset acquisition mechanism, FARM, will be established to support the operationalization of the action plans/business plans developed by ACs, FAs, PGs, CPAs, CFs, and agricultural unions under Activity 2.1.1. This will include the preparation of technical specifications and procurement packages in consultation with beneficiary groups and procurement of identified infrastructure assets and technologies. In preparing the technical specifications and	Sub-activity 2.2.1.1: Train ACs, FAs, PGs, CPAs, CFs, and unions of cooperatives annually to develop financial and business literacy and entrepreneurial skills (with particular focus on youth, women, and other socially excluded minorities) for preparing and updating business plans, including maintenance and operation plans and private finance and insurance plans. (Note: this will be done in conjunction with Sub-activity 2.1.1.4).	Sixteen (16) training events in each province over the project's lifetime, training materials, training completion reports, 124 ACs, FAs, PGs, CPAs, CFs, and agricultural unions trained to demonstrate their financial and business literacy and entrepreneurial skills (with particular focus on youth, women, and other socially excluded minorities) through approved business plans, including asset management and repayment plans under a climate adaptation asset acquisition mechanism.
		Sub-activity 2.2.1.2: Procure an initial set of agricultural infrastructure assets based on the approved business plans to operationalize FARM (average cost of USD 50,000 per beneficiary group with co-financing of between 5 – 20% by the beneficiary group; however, an agricultural union or a group of cooperatives/associations may access a larger	Up to 124 assets procured based on approved business plans as an initial investment to establish FARM accounts.

	procurement packages, attention will be paid to the specific and different needs of men and women.	amount by pooling funds (e.g., a group of 10 cooperatives may access up to USD 500,000).	
		Sub-activity 2.2.1.3: Establish a FARM account (trust fund) for each beneficiary group for advancing its business plan with clearly defined governance arrangements and ongoing business development support (i.e., FARM grants manual, Board of trustees, disbursement eligibility criteria, fiduciary and performance monitoring mechanisms).	Up to 124 FARM accounts established/124 beneficiary ACs, FAs, PGs, CPAs, CFs, agricultural unions supported, with the FARM grants manual, Boards of trustees, disbursement eligibility criteria, fiduciary and performance monitoring mechanisms and responsibilities.
Activity 2.2.2: Assess the feasibility of developing additional risk finance options for cashew, mango, and vegetable producers, particularly women farmers.	A feasibility study will be conducted to assess risk financing opportunities for cashew, mango, and vegetable producers to lessen their financial risks due to climate-induced crop loss and damage. The activity builds on the existing agricultural (index-based) insurance products for rice and other crops. Concurrently, the lack of insurance products for supporting agricultural unions, often providing internal quality control for meeting certification standards in bad harvest years, will be addressed to ensure business continuity in assisting individual farmers.	Sub-activity 2.2.2.1: Train PDAFF, PDoE and PDoC staff, including extension officers, district administration officers, commune and village extension agents, and NGOs, through TOT programs on the costs and benefits of index-based and other insurance products to raise awareness among smallholder farmers and local value chain actors, particularly women farmers and value chain actors.	550 PDAFF, PDoE and PDoC staff, including extension officers, district administration officers, commune and village extension agents, and NGOs trained, the awareness of 75,000 farmers and other local value chain actors (40-60% women) increased, training materials and completion reports.
		Sub-activity 2.2.2.2: Establish an expert working group with members from MAFF and other relevant public institutions, agronomic research organizations, and private insurer(s) to identify index-based risk financing parameters linked to agrometeorological information for cashew, mango, and vegetable production and explore the possibility of developing and piloting prototype index-based insurance products for these crops in partnership with a private insurer(s) under the National Crop Insurance Program. At least one of such products may aim to support agricultural unions' operations that are critical to implementing certification programs.	Risk financing parameters for cashew, mango, and vegetable producers and feasibility of 3 prototype insurance products developed and piloted and targeting individual farmers and their representative bodies (i.e., ACs, FAs, PGs, and agricultural unions).
Activity 2.2.3: Raise awareness of available financial support products and services in Cambodia systematically among smallholder farmers and local value chain actors, particularly women farmers and value chain actors.	A comprehensive list of various financial institutions as well as types of financial support and risk financing options will be made available for ACs, FAs, PGs, CPAs, CFs, unions, and their individual members to ensure the beneficiary groups have the information necessary to make the needed trust account arrangements and access complementary financial products and insurance services.	Sub-activity 2.2.3.1: Compile and regularly update a menu of financial support and insurance products and services available for ACs, FAs, PGs,, CPAs, CFs and agricultural unions and their individual members in NTSB as part of FFS curricula and demonstration activities and through existing user interfaces (i.e., Tonle Sap App, Chamkar and EcoKasksekor).	A regularly updated menu of financial support and insurance products and services incorporated into the FFS curricular and made accessible through the existing user interfaces (i.e., Tonle Sap App, Chamkar and EcoKasksekor), 60% of targeted farmers and other local value chain actors (40-60% women) regularly referring to the menu.
Activity 2.3.1: Develop a clearinghouse system, consolidating existing knowledge systems, for harmonized knowledge	A consolidated and improved clearinghouse will systematically collect and disseminate relevant lessons learned and best practices from all past and ongoing pertinent	Sub-activity 2.3.1.1: Consolidate and improve existing knowledge systems to established a semi-automated clearinghouse system based on the combination of algorithm and manual analysis (in partnership with, e.g., ICRISAT), to collect, process, and disseminate relevant	A consolidated and improved clearinghouse with specific information dissemination formats for various dissemination channels with full consideration of inclusivity and gender responsiveness.

management and systematic dissemination of lessons learned and best practices in climate-resilient, inclusive, gender-responsive, and high-value agriculture for supporting the implementation of the roadmaps and action plans under Activity 2.1.1, and for raising awareness of the practices and technologies under Activity 2.3.2 and associated economic and social benefits.	initiatives for promoting climate-resilient, high-value, and sustainable agriculture practices and technologies. The centralized system will assure the quality control and harmonization of information through various mediums, including FFS curricula, Facebook, YouTube channels, and mobile apps (e.g., Tonle Sap App, Chamkar and EcoKasksekor) so that farmers and other local value chain actors have reliable sources of consistent technical guidance and interactively provide feedback and information. The information is also used to promote buyers' informed purchasing and sourcing of agricultural products.	lessons learned and best practices in climate-resilient, inclusive, gender-responsive, and high-value production and processing practices and technologies. Partnerships with private sector entities might be sought for content creation to ensure that information and formats are appropriate for different target audiences (i.e., extension officers, ACs, FAs, PGs, CPAs, CFs, unions, farmers, buyers). (Note: the clearinghouse will build on the existing systems with a focus on improving the accessibility and consistency of information.)	
		Sub-activity 2.3.1.2: Promote through FFS curricula, Facebook, YouTube channels, and mobile apps (e.g., Tonle Sap App, Chamkar and EcoKasksekor) for on-demand information access among smallholder farmers, other local value chain actors and buyers, particularly women farmers and value chain actors.	Training materials, reports, brochures, social media platforms, and over 60% of target beneficiary farmers and local value chains, particularly women farmers and value chain actors, trained and regularly referring to on-demand services for tips.
		Sub-activity 2.3.1.3: Conduct annual training seminars for retailers, hoteliers, restauranteurs, and traders/exporters to increase their awareness of the benefits of climate-resilient, inclusive, gender-responsive, and high-value agriculture to promote informed purchasing and sourcing.	Seven (7) seminars, training materials, completion reports, and 1,200 retailers, hoteliers, restauranteurs, and traders/exporters trained.
Activity 2.3.2: Provide horizontally and vertically harmonized and targeted extension services, linking the provincial, district, commune, and village levels and public and private extension providers, to promote the adoption of climate-resilient, inclusive, gender-responsive, and high-value practices and technologies relevant for the implementation of roadmaps and action plans developed under Activity 2.1.1 and financed under Activity 2.2.1.	For successful implementation of the provincial-level value chain roadmaps and crop-specific action/business plans prepared by ACs, FAs, PGs, CPAs, CFs, and agricultural unions and financed through FARM under Activity 2.2.1 must be coupled with consistent and coordinated extension services to promote highly relevant production and processing practices and technologies that are climate-resilient, inclusive, gender-responsive, and high-value. Such practices and technologies will include the application of stress-tolerant varieties, small-scale irrigation systems, horticultural techniques (net house, raised bed production, drip irrigation), on-farm and homestead multi-use ponds, composting and organic fertilizer production, elements of the system of rice intensification, solar water	Sub-activity 2.3.2.1: Design inclusive and gender-responsive training curricula, including manuals and tools, tailored for four target groups - 1) public extension officers at the provincial, district and commune and village levels, 2) private extension providers, including NGOs, 3) trainer/model farmers and local value chain actors, and 4) female farmers and value chain actors - to promote the adoption of climate-resilient and high-value practices and technologies in line with provincial-level value chain roadmaps and action/business plans of individual AC, FA, PG, CPA, CF and unions (Note: lessons and best practices under Activity 2.3.1 feed into the curricula).	Four (4) training curricula with training manuals and tools, including a dedicated curriculum for female farmers and value chain actors.
		Sub-activity 2.3.2.2: Conduct biannual training of public extension officers (PDAFF extension officers, PDoWRM, PDoE and PDoC officers, district administration officers, commune and village extension agents) for identifying, demonstrating, and promoting climate-resilient and high-value practices and technologies relevant for the action/business plans, prepared by the ACs, FAs, PGs, CPAs, CFs, and agricultural unions.	Total of 5 annual training events in each province over the project's lifetime, training completion reports, an accumulative total of 550 public extension officers (40-60% women) trained.
		Sub-activity 2.3.2.3: Conduct annual training of private extension providers, including NGOs (e.g., input suppliers, retailers, and buyers) to mainstream climate-resilient and sustainable practices and technologies and clearinghouse	Total of 5 annual training events in each province over the project's lifetime, training completion reports, accumulative total of 400 private extension providers, including NGOs (40-60% women) trained.

	pumps and storage tanks, integrated livestock waste management, IPM, climate-resilient post-harvest storage, value-addition facilities, and traceability and labeling.	knowledge into their services in an inclusive and gender-responsive manner.	
		Sub-activity 2.3.2.4: Conduct biannual TOT training of representative farmers and other local value chain actors, particularly women farmers and value chain actors from ACs, FAs, PGs, CFs, and unions (15 representatives per group per year) on demonstrating and promoting climate-resilient and high-value practices and technologies relevant for their action plans implementation. TOT training curriculum includes a half-day session specially tailored for female farmers and value chain actors.	Ten (10) biannual TOT training events per district, including dedicated sessions for female farmers and value chain actors, training completion reports, over an accumulative total of 3,270 representatives of ACs, FAs, PGs, CFs, and unions trained.
		Sub-activity 2.3.2.5: Conduct biannual TOT training of representative farmers and other local value chain actors, particularly women farmers and value chain actors from CPAs (15 representatives per group per year) on demonstrating and promoting climate-resilient and high-value practices and technologies relevant for their action plans implementation. TOT training curriculum includes a half-day session specially tailored for female farmers and value chain actors.	Ten (10) biannual TOT training events per district, including dedicated sessions for female farmers and value chain actors, training completion reports, over an accumulative total of 480 representatives of CPAs trained.
		Sub-activity 2.3.2.6: Establish model farmer and processor demonstration sites with TOT trained representatives with support from district and village councils across 24 target districts to promote the adoption of climate-resilient, inclusive, gender-responsive, and high-value best practices and technologies (this demonstration will also include the use of agrometeorological advisory services by linking to Sub-activity 1.1.3.1).	A total of 100 demonstration sites established across 24 target districts.
Activity 2.4.1: Restore and protect critical forest catchments in upper watershed areas where the target crops are produced (this activity will build directly on and extend the existing conservation and catchment protection efforts by MoE, WCS and others).	Establishing an inter-district integrated watershed management (IWM) program with relevant district councils in upper catchment areas of where the target crops are produced will enable both the restoration and protection of critical catchment forests and other sensitive ecological zones and improvement of agroecological conditions, including water availability and quality, while also reducing hazards, for downstream targeted farmers. Such restoration efforts will also increase the livelihood quality of upstream	Sub-activity 2.4.1.1: Establish an inter-district IWM framework to identify priority areas and interventions for restoring and protecting critical catchment forests and other sensitive ecological zones in upper watershed areas where the target crops are produced. IWM activities will build on and enhance CPAs' and CFs' management plans.	An inter-district IWM framework agreement among participating districts, including agreed roles and responsibilities and resource contributions, priority restoration and protected areas, including CPAs and CFs, and strategic interventions for each identified area.
		Sub-activity 2.4.1.2: Design restoration and protection plans and provide capacity development in an inclusive and gender-responsive manner for the identified CPAs and CFs through agroforestry, other revenue-generating conservation activities (e.g., apiculture, agroforestry-based (fruits) tourism, NTFP value addition), and contract work.	Total of 16 CPAs and 4 CFs with restoration and protection plans engaged in and benefiting from critical forest catchment conservation and protection.
		Sub-activity 2.4.1.3: Support 4 CFs to implement and monitor their restoration and protection plans.	Restoration and protection plans of 4 CFs implemented with biannual monitoring reports.

	communities through improved ecosystem services and alternative livelihoods development (e.g., apiculture, agroforestry-based (fruits) tourism, NTFP value addition).	Sub-activity 2.4.1.4: Support 16 CPAs to implement and monitor their restoration and protection plans.	Restoration and protection plans of 16 CPAs implemented with biannual monitoring reports.
		Sub-activity 2.4.1.5: Establish a methodological approach and mechanism to identify baselines, monitor the impacts of catchment protection and restoration, and identify issues for improvement under the inter-district IWM framework.	Total of 7,600 hectares of critical forest catchments under restoration and protection regimes with a monitoring mechanism.
Activity 3.1.1: Upgrade/establish an enabling regulatory and institutional framework for the climate-proofed certification programs under Activity 2.1.2. to operate effectively.	The updated guidelines, training manuals, and tools for the target certification programs under Activity 2.1.2. must be fully underpinned by appropriate regulatory conditions and institutional arrangements to operate effectively and ensure long-lasting impacts.	Sub-activity 3.1.1.1: Mobilize the TWG, established under Sub-activity 2.1.2.1, to identify areas of improvement and recommend actions for ensuring an enabling regulatory and institutional environment (e.g., online certification/traceability tools) for promoting climate-resilient, inclusive, and gender-responsive agricultural certification programs.	Technical Review Committee, TORs (e.g., for online certification/traceability tools), review report with recommendations.
		Sub-activity: 3.1.1.2: Organize a stakeholder validation meeting(s) for the recommendations and submit stakeholder validated recommendations for amendments in the regulatory and institutional framework to the policymakers for their consideration.	Stakeholder validation report, validated recommendations, an official request for amendments.
Activity 3.1.2: Demonstrate a harmonized sectoral approach to climate-resilient, inclusive, and gender-responsive finance to complement Activity 2.2.1 for rolling out the FARM.	This approach will promote and demonstrate harmonized practices across the agricultural finance sector to mainstream climate and sustainability considerations as critical de-risking measures by developing and adopting a scorecard system to increase financial access for smallholder farmers and other local value chain actors, particularly women farmers and value chain actors, with limited to no collateral assets.	Sub-activity 3.1.2.1: Establish a working group with members from public and private financial institutions servicing the agriculture sector to design a lending scorecard system together with a user manual to consider climate-resilience and sustainability as main eligibility criteria for screening loan applications from smallholder farmers and other local value chain actors with limited to no collateral.	A scorecard system and a user manual.
		Sub-activity 3.1.2.2: Facilitate agreements (i.e., MoUs) with at least three public and private financial institutions to set aside 2% of their overall lending portfolios for issuing loans to smallholder farmers and other local value chain actors, particularly women farmers and value chain actors, based on the scorecard system on a pilot basis (Note: Operations will initially be limited to the NTSB).	MoUs signed with at least three (3) financial institutions to pilot the scorecard. (Also, the project will support ARDB in developing social and environmental policy and transparency and accountability guidelines in order for ARDB to champion this activity).
Activity 3.1.3: Increase private sector engagement in sub-national planning for improved PSPPs.	Effective PSPPs for the development of climate-resilient, high-value, and sustainable value chains for smallholder farmers and other local value chain actors and ensuring food security depend on enabling conditions that forge coordination and collaboration across relevant sectors (i.e., agriculture, finance, food, retail, hospitality, and trade) and between national and sub-national governments. Another such condition is to respond to citizens'	Sub-activity 3.1.3.1: Strengthen the provincial public forum mechanisms by increasing private sector engagement to facilitate open dialogues between governments, the private sector, and citizens (notably smallholder farmers and local value chain actors) to forge effective PSPPs in areas, including agrochemical control, agricultural certification, contract farming, finance, insurance, and traceability.	A dedicated private sector session in each provincial forum, session materials, completion report, at least two successful PSPP models, demonstrated.
		Sub-activity 3.1.3.2: Establish a sub-committee to serve NCSD and NCDD to strengthen cross-sectoral and vertical coordination and institutional arrangements by improving a feedback mechanism between national policy processes and sub-national forums on PSPPs for climate-resilient, inclusive, gender-responsive, and high-value agriculture and	A sub-national committee, TOR, committee meeting reports, tri-annual issue papers (21 papers over the project lifetime).

	voices to create and achieve shared social visions, and this activity will ensure these enabling conditions.	improved food security. (Note: the sub-committee will do this by producing tri-annual issue papers to facilitate policy debates among NCSD and NCDD members).	
Activity 3.2.1: Establish a gender-responsive landscape-level agroecology monitoring system (LAMS) with an interactive web platform.	LAMS will offer a one-stop-shop platform for public and private investors in agriculture to make informed investment decisions. LAMS will guide investors by identifying investment gaps and opportunities in making agriculture resilient to climate change, high-value, inclusive, and gender-responsive to maximize their investment returns and track investment progress in terms of emissions, climate resilience, and social and environmental impacts over time. LAMS will be operationally linked to other climate-related monitoring systems (e.g., REDD+ NFMS, NDC Enhanced Transparency Framework)	Sub-activity 3.2.1.1: Establish an expert working group with technical members from institutions managing relevant databases concerning climate change, agricultural production, and related socio-economic development and investment activities to identify the scope of LAMS's function parameters, data needs, and sources, and data sharing and harmonization needs, roles and responsibilities of parties involved, and an annual operating budget.	LAMS's scope of function parameters, data needs and sources, data sharing and harmonization requirements, roles and responsibilities of parties involved, and annual operating budget.
		Sub-activity 3.2.1.2: Facilitate data sharing and harmonization agreements between MAFF (a host of LAMS) and relevant data-holding institutions (NIS, MAFF, MoE, MoC, MWoRAM, and others).	Necessary data-sharing agreements.
		Sub-activity 3.2.1.3: Design a gender-responsive LAMS operating framework (in partnership with, e.g., ICRISAT) with a web interface and an SOP for operating LAMS, including operational guidelines, roles and responsibilities, and training manuals.	LAMS operating framework with a web interface, SOP, guidelines, and training manuals.
		Sub-activity 3.2.1.4: Train system analysts and administrators on the SOP to operationalize LAMS.	One week intensive training program for an initial group of 25 system analysts and administrators in 1st year, followed by annual training events to train a total of 90 analysts and administrators over the project lifetime, training completion reports.
		Sub-activity 3.2.1.5: Refine the predictive models of climate impacts on the target crops and other key crops in AquaCrop and through AEZ methodology based on ground data to aid the identification and selection of climate-resilient investment options under LAMS.	Refined predictive models specific to NTSB and possibly beyond, indicating short (2030), medium (mid-century), and long (end of the century) term predictions.
Activity 3.2.2: Promote the use of LAMS in public and private investment decision-making, monitoring, and reporting.	To ensure wide application of LAMS among policymakers, public institutions, and private investors, promotional material development (e.g., leaflets, sample analysis reports shared through social media and email listserv), and awareness-raising and end-user training events, including virtual resources, will be carried out.	Sub-activity 3.2.2.1: Develop awareness materials (e.g., leaflets, sample analysis performed on LAMS web platform, virtual end-user support materials on YouTube) and an end-user training program.	Awareness materials and training program.
		Sub-activity 3.2.2.2: Conduct bi-annual end-user training events to promote the broad application of LAMS and collect user feedback to improve LAMS's scope and analytical functions.	Ten (10) national-level training events over the project lifetime, training completion reports, up to 2,500 end-users (40--60% women) trained.

E.7. Monitoring, reporting and evaluation arrangements (max. 500 words, approximately 1 page)

XIV. Monitoring and Evaluation

217 In its role as the AE, FAO (specifically the FAO-GCF project supervision team) will oversee and supervise the implementation of this project per the Accreditation Master Agreement (AMA) signed between FAO and the GCF. As per the GCF Monitoring and Accountability Framework and the AMA, FAO will provide the GCF with an Inception Report, Annual Performance Reports, an independent Mid-term Evaluation report, a Project Closure Report, and an independent Final Evaluation report. FAO will also provide semi-annual and annual Financial Reports throughout project implementation.

218 At the technical level, responsibility for monitoring will rest with the PMU. The PMU will monitor its progress and impacts via: (i) georeferencing of field activities, allowing clear and transparent identification of results and beneficiaries; and (ii) field data collection by the project's dedicated monitoring and evaluation (M&E) team, led by an M&E Specialist. The M&E team will deploy a combination of direct observation, participatory assessment, and pre and post-intervention survey methods at the individual, household, community, and institutional levels.

219 These M&E mechanisms, described in Annex 11, will enable the PSC, PMU, and EEs to demonstrate the adaptive management of the project. Such practices will also be informed by its environmental and social management framework (ESMF) (Annex 6) to take anticipatory action to address risks that may negatively impact the expected results. The PMU will also track the implementation of other related plans, the gender action plan (Annex 8) and stakeholder engagement plan (Annex 7).

220 There will be a grievance redress mechanism established. The PMU will ensure that the mechanism is easily accessible for the project's stakeholders and beneficiaries. The system will follow FAO's Guidelines for Compliance Reviews, which lay out specific procedures for handling and addressing complaints related to its Environmental and Social Standards (FAO ESS, 2015), and establish a designated Safeguards Specialist as a focal person for the grievance redress system. The Safeguards Specialist will work closely with the M&E Specialist to ensure the results-based and adaptive management of the project.

221 The PMU will coordinate with the co-EEs to prepare and submit the following reports accordingly to the PSC, NDA and GCF.

- Inception report to ensure any necessary adjustments to bring the project up to date;
- Quarterly progress reports;
- Annual project performance reports; and
- Annual financial reports on GCF grant and co-finance expenditures

XV. Independent Evaluations

222 To provide an external viewpoint on the progress of the project and the achievement of its objectives, and in line with the AMA signed with the GCF, two independent project evaluations will be conducted by FAO – interim and final evaluations. In line with the FAO policy on evaluations, the interim (midterm) and final evaluations may be either managed by FAO Office of Evaluation or decentralized (under the responsibility of decentralized offices). In both cases, they will be carried out by a team of independent external consultants. The evaluations will also be conducted in line with the GCF Evaluation Policy, and will follow the GCF's Integrated Results Management Framework, namely containing an assessment of the paradigm shift potential and its enabling environment.

F. RISK ASSESSMENT AND MANAGEMENT

F.1. Risk factors and mitigations measures (max. 3 pages)

Selected Risk Factor 1: Possible low demand due to changes in market trends

Category	Probability	Impact
Technical and operational	Medium	High

Description

223 Both domestic and international agricultural/food market trends evolve at a relatively fast speed. At the same time, the trend towards quality and safe food and agricultural products will likely remain as the country transitions into a middle-income economy. Even though a thorough market vulnerability/demand assessment has been done as part of this project preparation, the market opportunities could shift towards other crops or the demand relative to the production and value addition capacity of the project's beneficiaries could reduce to impact the project.

Mitigation Measure(s)

224 The project has identified and assessed several agricultural certification programs already operational in the country with the premium earning capacity as indicative market vehicles for instigating transformational change towards climate-resilient agriculture. Specific certification programs will only be selected at the inception stage. This is because market trends and baseline capacities and conditions are likely to evolve further between the project formulation and inception stages. Therefore, the selection of specific market instruments will be made after updating market opportunities and baselines under Output 2.1. as part of the roadmap development and business planning. Similarly, the choice of specific target beneficiary groups, in addition to the potential champion groups already identified through the project formulation phase, will also be completed at that stage. This is an adaptive management strategy to address this risk and ensure that the project identifies the most suitable and timely match between the certification programs and target crops based on the most up-to-date assessment of opportunities and baselines. In coordination with the EEs and private sector collaborators, the project will keep a close watch on these shifts throughout the project to take adaptive action as required.

Selected Risk Factor 2: Limited intersectoral coordination and institutional arrangements

Category	Probability	Impact
Technical and operational	Medium	Medium

Description

225 Weak coordination and cooperation between sectoral ministries at the national and sub-national levels and between public and private actors pose a risk operationally and technically to undermine the project's effort to strengthen its beneficiary groups' resilience to climate change through the value chain approach. The success of this approach is contingent upon effective coordination and collaboration between actors along the target value chains.

Mitigation Measure(s)

226 While having the SPC with members from the critical sectoral ministries, NGOs, and private sector at the project oversight level ensures effective coordination and collaboration between these actors, the project will include specific activities to mitigate this risk, including:

- Intersectoral capacity building (e.g., training and awareness-raising) activities at the national and sub-national levels to reduce sectorally siloed thinking and practices;
- Data-sharing agreements (i.e., Activities 1.1.2 and 3.2.1) and MoUs (i.e., Activity 3.1.2) to establish formal coordination and collaboration mechanisms; and
- Activity 3.1.3 to promote improved intersectoral coordination through NCSD, NCDD, and provincial forums.

Selected Risk Factor 3: Limited stakeholder engagement

Category	Probability	Impact
Technical and operational	Low	High

Description

227 The likelihood of limited engagement by the beneficiary groups, including ACs, FAs, PGs, CPAs, FAs and unions, and the private actors, in the project activities is limited given the extensive consultations with the potential beneficiary groups and various needs assessments during the formulation stage. However, related to the first risk identified above, shifts in market trends, opportunities, and baseline capacities and conditions could affect their engagement level.

Mitigation Measure(s)

228 In coordination with the NDA and the existing workstreams of the EEs and private sector collaborators, FAO will keep all potential beneficiary groups updated between the project submission and inception and monitor changes in market trends, opportunities, and baseline capacities and conditions. During and after the inception, the project will continue to ensure effective two-way communications with beneficiary groups to ensure their interests and needs are well reflected in the project activities for effective stakeholder engagement.

Selected Risk Factor 4: Procurement delays under FARM operationalization (Output 2.2)

Category	Probability	Impact
Technical and operational	Medium	Medium

Description

229 In establishing FARM Trust Funds under Output 2.2, the project plans to handle roughly 124 procurement cases in the first 3 years. Prompt completion of this operation is imperative for the FARM Trust Funds to provide timely and effective finance for implementing the beneficiary groups' business plans; however, prolonged procurement procedures or failure to sign contracts for delivery the goods and infrastructure assets would cause significant delays.

Mitigation Measure(s)

230 The project will establish a dedicated team of national and international procurement experts to execute this task. The PMU procurement officer may also support this team when and as appropriate. FAO, together with the PMU, will closely monitor the progress of this task and apply adaptive measures to remove any operational glitches while at the same time applying FAO's standards and international best practices to ensure the quality and speed of this activity.

Selected Risk Factor 5: Social and environmental impacts

Category	Probability	Impact
Reputational	Low	High

Description

231 Several social and environmental risks have been identified in the ESMF (Section G below and Annex 6). These risks can negatively impact the livelihoods of the project's beneficiaries and the surrounding environment they depend on for its various agroecological functions. Especially, since the project employs the value chain approach, combined with FARM (i.e., a a climate adaptation asset acquisition mechanism), as its primary vehicle of transformation, the project must ensure that its effort towards the market and financial inclusion does not result in the opposite effect on specific groups of people and individuals, especially women and other socially excluded minorities.

Mitigation Measure(s)

232 As described in the next section, the project's ESMF (Annex 6) lays out the overall strategies to mitigate/minimize any harmful social and environmental risks. In particular, while also enhancing positive impact, the gender action plan (Annex 8), stakeholder engagement plan (Annex 7), and Indigenous Peoples Plan (also under Annex 6) will prescribe specific measures to address negative impact. These strategies and efforts will be further contextualized into ESMPs at the project's inception to implement targeted mitigation actions.

Selected Risk Factor 7: Global Pandemic

Category	Probability	Impact
Other	Medium	High

Description

233 The full effects and severity of the COVID-19 crisis on Cambodia are not yet known. However, what is clear is that this global pandemic has had both immediate to mid-term effects on livelihoods and food security and has deeply affected society and the country's economic systems as the pandemic continues to require restrictions for the movement of people and goods. These restrictions have caused significant delays and posed many logistical difficulties during the project formulation phase. If continued or a new pandemic emerged, these restrictions could have a considerable bearing on the implementation of the project both operationally and technically.

Mitigation Measure(s)

234 FAO, as the AE, will take stock of the lessons learned and best practices from the current pandemic in the country, regionally, and globally to establish enhanced protocols and procedures for operating under similar restrictions to ensure its business continuity. FAO will coordinate and work closely with the NDA and co-EEs to ensure that they have comparable protocols and procedures in place. FAO will use the PSC as the primary platform for coordination and collaboration for this purpose.

Selected Risk Factor 8: Financial Irregularities

Category	Probability	Impact
ML/FT	Low	High

Description
235 This risk is considered low to medium. Cambodia is listed by the Financial Action Task Force (FATF) as a jurisdiction with strategic deficiencies in its international anti-money laundering and combatting the financing of terrorism and proliferation (AML/CFT) standards. FAO as the AE is committed to mitigating this risk through several measures.
Mitigation Measure(s)
236 FAO confirms that: • the project activities will not be conducted in any jurisdiction which is subject to or affected by United Nations Security Council (UNSC) resolutions. • No individual or entity that is listed on any UN Security Council sanctions list, including the UN Consolidated Sanctions list will be involved in any manner with the project or its activities, either as a counterparty, implementer, or beneficiary. • The project will distribute directly to beneficiaries agricultural assets through the FARM. FAO's Manual Section 503 on Asset Management, including sub-sections on asset disposal and transfer to financial beneficiaries, will guide beneficiary selection, legal agreement, and asset transfer processes and procedures to prevent fraudulent and illegal practices, including money-laundering and terrorist financing. 237 FAO will follow the findings and recommendations of the HACT micro assessment on the co-EE (i.e., MoE and MAFF) to establish appropriate fiduciary management and control measures to ensure that materials or technology procured under this project are used only for the purposes intended and are not diverted or misused for unauthorized, improper or illicit purposes. As an additional measure, its institutional and project-level grievance redress mechanisms, corporate policies on fraud and other corrupt practices, FAO Vendor Sanctions Policy (Admin circular 2014/27), FAO Whistleblower Protection Policy (Admin Circular 2011/05) and others listed here: http://intranet.fao.org/departments/oig/investigations/ including those of the Office of the Inspector General (OIG) will be in place to address this risk.

G. GCF POLICIES AND STANDARDS

G.1. Environmental and social risk assessment (max. 750 words, approximately 1.5 pages)

238 The Environmental and Social Management Framework (Annex 6) identifies the proposed project as Category B, which suggests that the project contains activities with potential limited adverse environmental and/or social risks and impacts that individually or cumulatively, are few, generally site-specific, largely reversible, and readily addressed through mitigation measures.

239 The following summary highlights a few notable risks that may have potential diverse environmental and social impacts, which will require specific mitigation plans.

- High risk linked to the undertaking of project activities within Community Protected Areas (CPAs) (less than 10,000 ha) and Community Forest Areas (CFAs) located within National Parks and Wildlife Sanctuaries.
- Moderate risk linked to the transport and provision of seeds and planting materials for both agricultural and forest enrichment planting as well as the establishment of planted forests. – based on support to the provision of improved planting stock to agricultural cooperatives as well as work to rehabilitate Community Protected Areas (CPAs) (less than 10,000 ha) and Community Forest Areas (CFAs)
- All other risks are identified as low, as the project will seek to improve activities linked to agriculture and land management across the target landscapes through adoption of improved practices and provision of improved support and enabling environment and thus will reduce environmental and social risk areas below business-as-usual levels even where linked to a risk area.

240 Further information on the risk areas identified and assessed as well as responses to them is also provided in the table below, which follows the FAO Environmental and Social Standards (ESS) while also linking these with the IFC Performance Standards, which the GCF provisionally adopted. The project's risk management approach will also be based around FAO's three-phase approach of identifying activities, screening, and developing management plans (i.e., Environmental and Social Management Plans (ESMPs)). While the ESMF outlines the overall risk mitigation framework, more detailed assessments and ESMPs will be prepared at the activity level once specific beneficiary groups, locations, and standards are identified at the project inception stage.

Table 17: Risk Assessment Matrix

FAO Safeguard	Safeguard Triggered?	Justification and mitigating actions
FAO ESS1: Natural Resource Management IFC PS 1. Assessment and management of environmental and social risks and impacts	No	The project promotes sustainable land management to prevent or minimize land degradation through erosion control, integrated nutrient management, management and restoration of soil, water, and biological resources, and maintenance of ecosystem services in close consultation with local land users. The project will also support improved information management and access to finance to support enhanced technologies to improve the efficiency of and reduce impacts of irrigation (including solar irrigation systems and smart irrigation systems (e.g., drip irrigation and ponds as well as rice-fish systems)) and water management systems within production areas (with all systems utilizing dams under 5 m and not targeting areas over 20 ha). All sub-activities proposed that will include specific irrigation actions will also be subject to a risk screening prior to implementation. The project will promote the clarification of usufruct and tenure rights of farmers and households to reduce investment risks in adopting climate-resilient and sustainable technologies and practices. It will not result in a negative change to existing legitimate tenure rights, focusing on locally-based agricultural cooperatives and community-based protected areas and forest management groups who already have defined user rights but may require support in enhancing documentation of these. Any action to revise or change rights will be subject to a full screening and management plan. The project will also work towards strengthening adaptive capacities and resilience of target communities through enhanced information on climate impacts and weather events, as well as improved skills and agricultural practices to respond to changes in climate. Through support to improved land-use practices and enrichment planting and regeneration, the project will also focus on enhancing GHG removals and reducing emissions. The exclusion list in Annex 6 further ensures the project will not finance activities deemed ´high risk.´
FAO ESS2: Biodiversity, Ecosystems and Natural Habitats And IFC PS 6. Biodiversity conservation and sustainable management of living natural resources	Yes	The project will work with 14 CPAs, with three of these located in National Parks, five within Wildlife Sanctuaries, and two within the Northern Biodiversity Conservation Corridor. While actions within protected areas are considered high risk, a number of mitigating factors exist that help to reduce the risk of implementation within these areas. These include: • Agricultural production systems in PAs in Cambodia pre-date the establishment of the PAs and the project and are permitted to remain but not expand under Cambodian law. • Proposed activities target both enhancing the sustainability of agricultural production systems and, as such, will support capacity building and support to reduce impacts of agriculture within these areas and the rehabilitation of degraded areas (using native and locally relevant species) of the conservation areas that have previously been impacted by shifting agriculture and or logging. A full ESMP will be prepared for the target areas once specific locations and support actions have been agreed upon during the implementation phase, with this being used to update and strengthen the proposed management responses.
FAO ESS 3: Plant Genetic Resources for Food and Agriculture And IFC PS 6. Biodiversity conservation and sustainable management of living natural resources	Yes	The project will not introduce crops and varieties that are previously not grown in the project area or similar areas within Cambodia. The project will support the rehabilitation of CPA and CFAs with a focus on planting native species as well as small-scale sustainable agroforestry (e.g., woodlots and home-garden systems) to meet the growing household demand for fuelwood and wood products. The project will adopt and closely follow the national REDD+ safeguards framework and other relevant national legislation, including CPA and CFA guidelines, to minimize social and environmental risks through forest restoration activities.
FAO ESS 4: Animal-Livestock and Aquatic – Genetic Resources for Food and Agriculture And IFC PS 6. Biodiversity conservation and sustainable management of living natural resources	No	The project will not introduce non-native or non-locally adapted species, breeds, genotypes, or other genetic material to the project areas. The project's support to improved use of fish ponds linked to rice irrigation will also help to enhance water management systems and reduce environmental impacts while contributing to local food security.
ESS 5: Pest and Pesticide Management And PS 3. Resource efficiency and pollution prevention	No	The project will promote the adoption of GI, CamGAP, HACCP, and organic certification compliant production and processing and IPM. The project will thus develop guidelines and support to farmers to reduce and improve use of pesticides based on international and local best practices. The project will not result in the procurement or direct supply of pesticides or agrochemicals.

FAO ESS 6: Involuntary Resettlement and Displacement And IFC PS 5. Land acquisition and involuntary resettlement	No	The project will not allow any involuntary resettlement or displacement. Although no negative impacts are foreseen in proposed actions, an ESMP will be prepared once specific project intervention sites have been identified. This will ensure that no groups will be displaced from their lands or have tenure rights impacted. These risks are not anticipated as the project design focuses on working with established agricultural cooperatives and unions that have clear and identified production areas as well as with CPAs and CFAs that have demarcated areas and legally recognized rights of use.
FAO ESS 7: Decent Work And IFC PS 2. Labor and working conditions And IFC PS 4. Community health, safety, and security	No	The project will not result in the direct employment of staff. Employment opportunities will likely be generated as a byproduct of the project, but not directly. The project will work within value chains and landscapes that include subsistence producers and those other vulnerable informal agricultural workers, as well as in situations where youth work mostly as unpaid contributing family workers may occur. Project activities are focused on improving the nature of work within these value chains, including action to help reduce incidence of SEAH and GBV and support to enhanced uptake of sustainable and high-value approaches and standards that, in some cases, include improved working requirements and skillsets while enhanced value chain performance will also help to reduce youth migration through improved options for employment. All target groups are also established ACs, FAs, PGs, and unions that have been operational through cooperative arrangements and, as such, provide a level of equity across their production systems. The ESMF provides an assessment of these issues as well as key mitigation measures to address what risks are present. However, due to the risks of action within the value chain, a full ESMP will be prepared once specific beneficiary groups, locations, and target certification systems are agreed upon. This ESMP will also review engagement in PAs as noted under FAO ESS 2 above. Occupational health and safety (OHS) activities will be taken seriously for the implementation of the project activities. While most project activities are low risk, forestry and agricultural activities have a level or pre-existing risk. Project interventions will not increase these risks with improved training and support on CamGAP as well as progress towards global certification standards also seen as helping to reduce these risks – as such, this is seen as a low risk.
FAO ESS 8: Gender Equality And IFC PS 1. Assessment and management of environmental and social risks and impacts	No	The project will support gender empowerment and equality and has been designed to take into account the specific needs and priorities of women and girls and address key considerations linked to SEAH and GBV what action can be taken to address these. A gender assessment and Gender Action Plan have been developed for the project (Annex 8) that provides specific actions to be undertaken and an allocated budget..
ESS 9: Indigenous peoples and cultural heritage And IFC PS 7. Indigenous peoples (IP) IFC PS 8. Cultural heritage	Yes	There are over 40,000 people across 10 IP groups identified as living within the target provinces based on the 2019 survey information. While the specific project locations have yet to be identified and thus their impact on these IP groups cannot yet be fully assessed, a baseline Indigenous Peoples Plan (IPP) has been developed for the project that provides the framework to guide action with further development of a specific IPP for target areas being required during project inception should they include IP groups. The plan also notes and ensures that efforts will be made to respect, include and promote IP issues during project implementation, including their right to Free, Prior, and Informed Consent (FPIC) during the final identification of intervention sites.

241 Based on this screening process through the ESMF, specific risk-based ESMPs at the activity level will be prepared to establish specific management plans. Monitoring and reporting on the overall plan and specific sub-plans will be coordinated through the PMU and National Safeguard Specialist, described in Section B.4. This also includes the project's Grievance and Redress mechanism that will integrate closely with those existing in Cambodia, including the REDD+ system (see Annexes 6 and 7).

242 This approach and assessment are based on a combination of FAO and GCF global best practice and guidance frameworks as well as extensive stakeholder consultation that occurred during project formulation, including specific ESMF and Gender assessment missions carried out to target areas.

G.2. Gender assessment and action plan (max. 500 words, approximately 1 page)

243 **Gender Analysis.** An analysis of the gender-related aspects of the project was also undertaken during the development of the ESMF and Gender Action Plan (GAP) (Annex 8). The analysis shows that equality is provided for in various forms in legal documents, including the Constitution, specific policies and strategies such as the Five-Year Strategic Plan of the Ministry of Women's Affair as well as sector strategies and legislation, including the Climate Change Strategic Plan for Gender and Climate Change (2013-2023), the Land Law and the Marriage and Family Law (2001) and the Forest Law (2001) as well as guidance on community forestry and community protected areas

establishment which both encourage the participation of women in management committees and their consideration in planning. The country is also an active signatory of several key international treaties, including the Elimination of All Forms of Discrimination against Women (CEDAW), the UN Declaration on the Right of Indigenous Peoples (UNDRIP), and the Beijing Declaration and Platform for Action. National and sub-national institutions have implemented their respective gender action plan adopting national strategies to accelerate gender equality in all sectors.

244 While these frameworks have supported significant progress towards gender equity, there remain a number of challenges both across the country and within the proposed target landscapes and value chains. The assessment has looked at these through three main areas linked to project activities – these are:

i. gender gap in access to market opportunity, technology, climate risk info, skill, and credit;
ii. gender gap in use and control over resources and assets that includes CPA, CF, AC, FA, and value chain;
iii. gender gap in capacity development and participation
iv. gender gap in decision making

245 This information has then been utilized to identify key actions within the gender action plan.

246 **Gender Action Plan.** A detailed GAP has been prepared for the project (Annex 8). The GAP focuses on supporting a fully gender-sensitive and gender-positive approach throughout the project's activity areas. It is fully supportive of the existing project design, which considers gender elements and prioritizes support to a number of women's agricultural cooperatives and associations. The GAP's broader approach is based around strengthening the application and further practical development of the Government's policies and strategies to promote gender equality as well as working with the specific needs and conditions identified with the target value chains and beneficiary groups, including CPAs and CFs. It also supports actions to strengthen the coordination and implementation of the project's outcomes among stakeholders, specifically Outcome 3, to help ensure a more effective and gender-appropriate process by helping to strengthen partnerships between community, private sector, and government actors. Key practical tools within the GAP include – ensuring new tools, systems, and support mechanisms are developed through a gender lens so that they are able to effectively support different groups, ensuring gender balance in participation in project activities and within the project's own operating structures (trainings, FARM arrangements, membership of decision-making bodies) and supporting project activities to help enact change in key institutional structures (decision making bodies, legislation, and regulation) so that these may become more gender-sensitive and promote better inclusion.

G.3. Financial management and procurement (max. 500 words, approximately 1 page)

247 As indicated above, FAO, as the AE for this proposed project, will assume fiduciary and procurement responsibility effectively and professionally by adhering to international standards and good practices, reflected in relevant FAO rules and regulations, and to the terms of FAO's Accreditation Master Agreement (AMA) with the GCF. FAO will ensure timely disbursement of the GCF funds and accounting and production of financial reports on the use of funds.

248 This responsibility will also encompass financial management and procurement performed by the GDLC/MoE and GDA/MAFF as the project's co-EEs. FAO has completed micro assessments of GDLC/MoE and GDA/MAFF under the Harmonized Approach to Cash Transfer (HACT), providing a common framework for UN agencies' cash transfer to government and non-government partners. Both co-EEs have scored overall a moderate risk rating. Following the reports' specific findings and recommendations, FAO will set clear parameters for each co-EE to manage particular risks in its financial management and procurement of goods and services, as defined through HACT assessment mitigation measures as well as FAO's OPIM Risk Mitigation and Assurance Plan (RMAP) will be used as a tool to monitor the risk management and mitigation during the project. In this respect, the project will place a dedicated Operations Coordinator (see Table 11, Section B.4) in each co-EE to support them and ensure financial and operational alignment between the PMU and co-EEs.

249 Further to approval of the project by the GCF, FAO will disseminate its Operations Manual and Procurement Procedure Manual among the members of the PMU, PSC, co-EEs, core team of area experts, and other relevant stakeholders before the start of the project's activities. During the project's implementation, FAO will also build the institutional capacities of the PMU, PSC, and co-EEs in strategic planning, technical control, financial management, and procurement.

250 Direct procurement by FAO will be done in accordance with its Manual Section on "Procurement of Goods, Works, and Services." To sub-contract the delivery of specific activities through IPs (see Section B.4) using Letters of

Agreement, FAO operates in accordance with its Manual Section on "Letters of Agreement." Such services are managed under the FAO Procurement Service, which provides policy and operational support to FAO offices and staff undertaking these activities to ensure the Organization procures goods, works, and services based on "Best Value for Money" principles.

251 Financial management and procurement by the two co-EEs will be overseen and supervised by the FAO-GCF project supervision team (see Section B.4) as per the FAO Operational Partners Implementation Modality (OPIM). The FAO-GCF project supervision team will undertake regular supervision missions and recruit a qualified, internationally recognized auditing firm to perform frequent spot checks and audits to ensure financial management and procurement by the PMU and co-EEs are being conducted in line with agreed standards and practices. The frequency of such spot checks will be twice per year, while audhits will be performed once per year.This will be governed by the agreement signed between FAO and the co-EEs before the project becomes operational. It should be noted that for the identified Operational Partners (OPs)(i.e., the co-EEs) under the FAO rules and procedures, budgets to be transferred to the OPs and results associated are non-binding and may change due to FAO internal partnership and agreement procedures which have not yet been concluded at the time of this FP submission. The AE fee will bear the costs of assuming the audit and spot check responsibility.

252 As specified under Section E.7, the PMU will produce quarterly and annual reports on finances and purchases for the PSC's review. FAO and the PSC will jointly monitor the progress towards the project objectives in financial and operational terms.

G.4. Disclosure of funding proposal

☒ No confidential information: The accredited entity confirms that the funding proposal, including its annexes, may be disclosed in full by the GCF, as no information is being provided in confidence.

☐ With confidential information: The accredited entity declares that the funding proposal, including its annexes, may not be disclosed in full by the GCF, as certain information is being provided in confidence. Accordingly, the accredited entity is providing to the Secretariat the following two copies of the funding proposal, including all annexes:

- full copy for internal use of the GCF in which the confidential portions are marked accordingly, together with an explanatory note regarding the said portions and the corresponding reason for confidentiality under the accredited entity's disclosure policy, and
- redacted copy for disclosure on the GCF website.

The funding proposal can only be processed upon receipt of the two copies above, if containing confidential information.

H. ANNEXES

H.1. Mandatory annexes

☒	Annex 1	NDA no-objection letter(s) **(template provided)**
☒	Annex 2	Feasibility study - and a market study, if applicable
☒	Annex 3	Economic and/or financial analyses in spreadsheet format
☒	Annex 4	Detailed budget plan **(template provided)**
☒	Annex 5	Implementation timetable including key project/programme milestones **(template provided)**
☒	Annex 6	E&S document corresponding to the E&S category (A, B or C; or I1, I2 or I3): **(ESS disclosure form provided)** ☒ Environmental and Social Impact Assessment (ESIA) or ☐ Environmental and Social Management Plan (ESMP) or ☐ Environmental and Social Management System (ESMS) ☐ Others (please specify – e.g. Resettlement Action Plan, Resettlement Policy Framework, Indigenous People's Plan, Land Acquisition Plan, etc.)
☒	Annex 7	Summary of consultations and stakeholder engagement plan
☒	Annex 8	Gender assessment and project/programme-level action plan **(template provided)**
☒	Annex 9	Legal due diligence (regulation, taxation and insurance)
☒	Annex 10	Procurement plan **(template provided)**
☒	Annex 11	Monitoring and evaluation plan **(template provided)**
☒	Annex 12	AE fee request **(template provided)**
☒	Annex 13	Co-financing commitment letter, if applicable **(template provided)**
☒	Annex 14	Term sheet including a detailed disbursement schedule and, if applicable, repayment schedule

H.2. Other annexes as applicable

☒	Annex 15	Evidence of internal approval **(template provided)**
☒	Annex 16	Map(s) indicating the location of proposed interventions
☐	Annex 17	Multi-country project/programme information **(template provided)**
☐	Annex 18	Appraisal, due diligence or evaluation report for proposals based on up-scaling or replicating a pilot project
☐	Annex 19	Procedures for controlling procurement by third parties or executing entities undertaking projects financed by the entity
☐	Annex 20	First level AML/CFT (KYC) assessment
☐	Annex 21	Operations manual (Operations and maintenance)
☐	Annex 22	Assessment of GHG emission reductions and their monitoring and reporting (for mitigation and cross cutting-projects)[26]
☐	Annex X	Other references

** Please note that a funding proposal will be considered complete only upon receipt of all the applicable supporting documents.*

References

ADB (2016) *Preliminary Flood and Drought Risk Assessment Report*.
ASPIRE (2019) *Agriculture Policy Research Study: Modernizing Agriculture Sector: Long-Term Vision and Policy Orientation*.
Bernacki, S. *et al.* (2018) *Restoration Opportunities Assessment Methodology for Landscape Restoration in Kampong Thom, Preah Vihear, and Siem Reap, Cambodia*. Phnom Penh, Cambodia.
Branca, G. and Mazzoli, E. (2022) 'Annex 3 Economic and Financial Analysis: Public-Social-Private Partnerships for Ecologically-Sound Agriculture and Resilient Livelihood in Northern Tonle Sap Basin of Cambodia (PEARL)'.
Bunthoeun, C. (2019) 'Japanese firm to build cashew processing plant The Toyota Tundra Police Say To Carry This', *Khmer Times*, pp. 1–8. Available at: https://www.khmertimeskh.com/50654880/japanese-firm-to-build-cashew-processing-plant/.
Burn, J.-M. *et al.* (2018) *Feasibility Study of Agricultural Certification Schemes in the Northern Tonle Sap Basin*. Phnom Penh, Kingdom of Cambodia.
Burn, J.-M. (2018) *SUPPORT INNOVATIVE MARKET LINKAGES IN CAMBODIAN RICE VALUE CHAIN*.
CIB & CSEZB (no date) *National Council for Sustainable Development Kingdom of Cambodia*.
Cramb, R., Sareth, C. and Vuthy, T. (2020) *White Gold: The commercialisation of rice farming in the lower mekong basin*, *White Gold: T in the Lower Mekong Basinhe Commercialisation of Rice Farming*. doi: 10.1007/978-981-15-0998-8.
Duong, G. and Khin, P. (2016) *The Vegetable Sector in Cambodia: A pro-poor policy study to address risk and vulnerability of smallholders in Cambodia*. Phnom Penh, Kingdom of Cambodia.
FAO (2016) *The Vegetable Sector in Cambodia*.
FAO (2021) *Global outlook on climate services in agriculture: INVESTMENT OPPORTUNITIES TO BRIDGE THE LAST MILE GAP*, *Global outlook on climate services in agriculture*. doi: 10.4060/cb6941en.
FAO (2022) *Climate Change Rationale: Public-Social-Private Partnerships for Ecologically-Sound Agriculture and Resilient Livelihood in Northern Tonle Sap Basin of Cambodia (PEARL)*. Rome.
Forest Trends (2015) *Conversion Timber, Forest Monitoring, and Land-Use Governance in Cambodia*. Available at: http://forest-trends.org/releases/uploads/Cambodia Concessions Report small size.pdf.
GSSD (2017) *National Adaptation Plan Process in Cambodia*. Phnom Penh, Kingdom of Cambodia.
ICEM (2020) *Feasibility Report: Value Driven Consumer-based Mechanisms for Cambodia*.
IFC (2010) *Prospects for Cambodia 's Cashew Sub-sector*.
IFC (2015) *Cambodia Rice: Export Potential and Strategies*.
Kula, O., Turner, C. and Sar, S. (2015) *An Analysis of Three Commodity Value Chains in Cambodia*.
MAFF (2013) *Plan of Action for Disaster Risk Reduction in Agriculture 2014- 2018*.
MAFF (2016) 'Cambodia Climate Change Priorities Action Plan for Agriculture, Forestry and Fisheries Sector 2014-2018', (March).
MAFF (2017) *MAFF Annual Report 2016-17*.
MAFF, CARD and FAO (2020) *Rapid Assessment of COVID-19 Impact on Agriculture and Food Security in Cambodia*. Phnom Penh.
Mazzoli, E. and Branca, G. (2022) *IMPACT OF ECONOMIC GROWTH ON THE ENVIRONMENT : ASSESSMENT OF A CLIMATE MITIGATION PROJECT IN*.
MoE (2006) 'National Adaptation Programme of Action to Climate Change (NAPA)', *Environment*, (October).
MoE (2015) *Cambodia's Intended Nationally Determined Contribution Cambodia*.
MoE (2020a) *Cambodia's Country Programme for the Green Climate Fund*.
MoE (2020b) *Cambodia's updated nationally determined contribution*, *General Secretariat of the National Council for Sustainable Development, MoE*.
MoEF (2016) *Report on Climate Public Expenditure Review 2013-2014*.
NCCC (2014) *Cambodia climate change strategic plan 2014 – 2023*.
Ngon, T. S. (2019) 'Food safety draft law under study', *Khmer Times*, 3 May, pp. 1–7. Available at: https://www.khmertimeskh.com/600367/food-safety-draft-law-under-study/.
NIS (2015) *Census of Agriculture of the Kingdom of Cambodia 2013*. Available at: http://www.nis.gov.kh/nis/CAC2013/CAC_2013_Final_Report_En.pdf.
NIS (2019) 'Cambodia Inter-Censal Agriculture Survey 2019 (CIAS19) Final Report'.
NIS (2020) *Cambodia Inter-censal Agriculture Survey 2019 Selection of Thematic Maps*.
Oeurng, C. *et al.* (2019) 'Assessing climate change impacts on river flows in the Tonle Sap Lake Basin, Cambodia', *Water (Switzerland)*, 11(3). doi: 10.3390/w11030618.
Rai, N. *et al.* (2015a) *Developing a National M&E Framework for Climate Change: Tracking Adaptation and*

[26] Annex 22 is mandatory for mitigation and cross-cutting projects.

Measuring Development (TAMD) in Cambodia.
Rai, N. *et al.* (2015b) *National M&E Framework for Climate Change: Tracking Adaptation and Measuring Development (TAMD) in Cambodia*. Available at: https://pubs.iied.org/10118iied.
ResponsAbility Investments AG (2015) *Organic rice from Cambodia*.
RGC (2014) *National Strategic Development Plan 2014-2018*.
RGC (2017) *National REDD+ Strategy 2017-2026*. The Kingdom of Cambodia. Available at: https://redd.unfccc.int/files/20180813_national_redd__strategy_cambodia.pdf.
RGC (2018a) 'Cambodia Sustainable Development Goal (2016-2030)', *Journal of Chemical Information and Modeling*, 53(9), pp. 1689–1699.
RGC (2018b) *National strategic development plan 2019-2023*.
RGC (2020a) *FIRST BIENNIAL UPDATE REPORT OF THE KINGDOM OF CAMBODIA TO THE UNITED NATIONS The National Council for Sustainable Development The Kingdom of Cambodia*.
RGC (2020b) *IDPoor*. Available at: https://www.idpoor.gov.kh/ (Accessed: 13 July 2021).
SARAN, S. (2017) *Organic Farming of Rice in Cambodia*.
Sasaki, N. *et al.* (2016) 'Forest reference emission level and carbon sequestration in Cambodia', *Global Ecology and Conservation*. Elsevier B.V., 7, pp. 82–96. doi: 10.1016/j.gecco.2016.05.004.
Seak, S. (2022) *National agrometeorological services and pest and disease early warning in Asia and the Pacific*. doi: 10.4060/cb6537en.
Thoeun, H. C. (2015) 'Observed and projected changes in temperature and rainfall in Cambodia', *Weather and Climate Extremes*. Elsevier, 7, pp. 61–71. doi: 10.1016/j.wace.2015.02.001.
UNDESA (2018) *The Least Developed Country Category : 2018 Country Snapshots*. Available at: https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/Snapshots2018.pdf.
Vannak, C. (2019) 'Mangoes next in line for China export : Ministry', *Khmer Times*, 11 September, pp. 1–8.
WB (2015) *CAMBODIAN AGRICULTURE IN TRANSITION: OPPORTUNITIES AND RISKS*.
WB (2019) *GNI per capita, Atlas method (current US$) | Data*. Available at: https://data.worldbank.org/indicator/NY.GNP.PCAP.CD?locations=KH&view=chart (Accessed: 9 July 2019).

No-objection letter issued by the national designated authority(ies) or focal point(s)

KINGDOM OF CAMBODIA
Nation Religion King

Ministry of Environment
Nº :..1596.....MoE

To: The Green Climate Fund "GCF"
Songdo International Business District
G-Tower, 175 Art Genter-daero
Yeonsu-gu, Incheon 22004
Republic of Korea

Phnom Penh, 12 August 2022

Re: Funding proposal for the GCF by FAO regarding Public-Social-Private Partnerships for Ecologically-Sound Agriculture and Resilient Livelihood in Northern Tonle Sap Basin (PEARL)

Dear Madam, Sir,

We refer to the project titled "Public-Social-Private Partnerships for Ecologically-Sound Agriculture and Resilient Livelihood in Northern Tonle Sap Basin (PEARL)" in the Kingdom of Cambodia as included in the funding proposal submitted by FAO to us on 21 February 2022.

The undersigned is the duly authorized representative of the Ministry of Environment (MoE), the National Designated Authority of the Kingdom of Cambodia.

Pursuant to GCF decision B.08/10, the content of which we acknowledge to have reviewed, we hereby communicate our no-objection to the project as included in the funding proposal.

By communicating our no-objection, it is implied that:

(a) The government of the Kingdom of Cambodia has no-objection to the project as included in the funding proposal;
(b) The project as included in the funding proposal is in conformity with the national priorities, strategies and plans of the Kingdom of Cambodia;
(c) In accordance with the GCF's environmental and social safeguards, the project as included in the funding proposal is in conformity with relevant national laws and regulations.

We also confirm that our national process for ascertaining no-objection to the project as included in the funding proposal has been duly followed.

We acknowledge that this letter will be made publicly available on the GCF website.

Sincerely Yours,
For Minister

TIN PONLOK
Secretary of State

Environmental and social safeguards report form pursuant to para. 17 of the IDP

Basic project or programme information	
Project or programme title	Public-Social-Private Partnerships for Ecologically-Sound Agriculture and Resilient Livelihood in Northern Tonle Sap Basin (PEARL)
Existence of subproject(s) to be identified after GCF Board approval	No
Sector (public or private)	Public
Accredited entity	Food and Agriculture Organization of the United Nations (FAO)
Environmental and social safeguards (ESS) category	Category B
Location – specific location(s) of project or target country or location(s) of programme	Northern Tonle Sap Basin, Cambodia
Environmental and Social Impact Assessment (ESIA) (if applicable)	
Date of disclosure on accredited entity's website	Thursday, September 15, 2022
Language(s) of disclosure	English and Khmer
Explanation on language	Khmer is the official language of Cambodia and the language understandable to affected peoples/stakeholders.
Link to disclosure	English: https://www.fao.org/3/cc1967en/cc1967en.pdf Khmer: https://www.fao.org/3/cc1967km/cc1967km.pdf
Other link(s)	FAO disclosure portal: https://www.fao.org/environmental-social-standards/disclosure-portal/en/ FAO Representation in Cambodia website (in English and Khmer): https://www.fao.org/cambodia/resources/publications/en/
Remarks	An ESIA consistent with the requirements for a Category B project is contained in the "Environmental and Social Management Framework".
Environmental and Social Management Plan (ESMP) (if applicable)	
Date of disclosure on accredited entity's website	Thursday, September 15, 2022
Language(s) of disclosure	English and Khmer

<table>
<tr><td>Explanation on language</td><td>Khmer is the official language of Cambodia and the language understandable to affected peoples/stakeholders.</td></tr>
<tr><td>Link to disclosure</td><td>English:
https://www.fao.org/3/cc1967en/cc1967en.pdf

Khmer:
https://www.fao.org/3/cc1967km/cc1967km.pdf</td></tr>
<tr><td>Other link(s)</td><td>FAO disclosure portal:
https://www.fao.org/environmental-social-standards/disclosure-portal/en/

FAO Representation in Cambodia website (in English and Khmer):
https://www.fao.org/cambodia/resources/publications/en/</td></tr>
<tr><td>Remarks</td><td>An ESMP consistent with the requirements for a Category B project is contained in the “Environmental and Social Management Framework”.</td></tr>
<tr><td colspan="2">Environmental and Social Management System (ESMS) (if applicable)</td></tr>
<tr><td>Date of disclosure on accredited entity’s website</td><td>N/A</td></tr>
<tr><td>Language(s) of disclosure</td><td>N/A</td></tr>
<tr><td>Explanation on language</td><td>N/A</td></tr>
<tr><td>Link to disclosure</td><td>N/A</td></tr>
<tr><td>Other link(s)</td><td>N/A</td></tr>
<tr><td>Remarks</td><td>N/A</td></tr>
<tr><td colspan="2">Any other relevant ESS reports, e.g. Resettlement Action Plan (RAP), Resettlement Policy Framework (RPF), Indigenous Peoples Plan (IPP), IPP Framework (if applicable)</td></tr>
<tr><td>Description of report/disclosure on accredited entity’s website</td><td>N/A</td></tr>
<tr><td>Language(s) of disclosure</td><td>N/A</td></tr>
<tr><td>Explanation on language</td><td>N/A</td></tr>
<tr><td>Link to disclosure</td><td>N/A</td></tr>
<tr><td>Other link(s)</td><td>N/A</td></tr>
<tr><td>Remarks</td><td>N/A</td></tr>
<tr><td colspan="2">Disclosure in locations convenient to affected peoples (stakeholders)</td></tr>
<tr><td>Date</td><td>Friday, 10 February 2023</td></tr>
<tr><td>Place</td><td>A. District Governor Offices of the 24 target districts
<table>
<tr><th>Province</th><th>District</th><th>Commune</th><th>Village</th><th>Location</th></tr>
<tr><td rowspan="4">Kampong Thom</td><td>Kampong Svay</td><td>Prey Preal</td><td>Trapaing Russey</td><td rowspan="4">District governor office</td></tr>
<tr><td>Prasat Ballangk</td><td>Salavisay</td><td>Salavisay</td></tr>
<tr><td>Prasat Sambo</td><td>Sambo</td><td>Sambo</td></tr>
<tr><td>Sandan</td><td>Sandan</td><td>Sandan</td></tr>
</table></td></tr>
</table>

	Santuk	Taing Krasaing	Thor Maneath	
	Stueng Saen	Kampong Roteh	Kampong Thom	Kampong Thom Provincial Hall Office
Oddar Meanchey	Anlong Veaeng	Anlong Veaeng	Ou Chenhchien	District governor office
	Banteay Ampil	Kouk Mon	Kouk Mon	
	Samraong	Ou Smach	Kiri Mongkol	Oddar Meanchey Provincial Hall Office
	Trapeang Prasat	Trapeang Prasat	Trapeang Prasat	District governor office
Preah Vihear	Chey Saen	S'Ang	S'Ang	
	Chhaeb	Chhaeb	Chhaeb	
	Choam Ksant	Choam Ksant	Choam Ksant	
	Kuleaen	Kuleaen	Kuleaen	
	Preah Vihear	Tbaeng Meanchey	Neak Banh Tek	Preah Vihear Provincial Hall Office
	Rovieng	Robieb	Tang Trak	District governor office
	Sangkum Thmei	Chamraeun	Tbaeng	
	Tbaeng Mean Chey	Pra Meru	Pra Meru	
Siem Reap	Banteay Srei	Khnar Sanday	Banteay Srey	
	Chi Kraeng	Kampong Khdey	Kampong Khdey	
	Prasat Bakong	Bakong	Roluos Lech	
	Siem Reap	Sangkat Slor Krom	Boeng Daun Pa	Siem Reap Provincial Hall Office
	Soutr Nikom	Dam Deik	Dam Deik	District governor office
	Svay Leu	Svay Leu	Chup Krom	

B. 16 Community Protected Areas (CPA) and 4 Community Forestry (CF)

No	CPA/CF Name	Location
1	CPA-Kaki Brahoang	Dang Kambet commune, Sandan District,

	(Boeng Per Wildlife Sanctuary)	Kampong Thom
2	CPA-Skor Krouch (Boeng Per Wildlife Sanctuary)	Sandan commune and District, Kampong Thom
3	CPA-Chhoam Thlork (Boeng Per Wildlife Sanctuary)	Ngan commune, Sandan district, Kampong Thom
4	CPA-Kbal Daun Krei (Prey Lang Biodiversity Conservation Corridor)	Mean Rith commune, Sandan district, Kampong Thom
5	CF-Prey Tatei	Mean Rith commune, Sandan district, Kampong Thom
6	CF-Prey O'Kranhoung	Mean Rith commune, Sandan district, Kampong Thom
7	CF-O'Soam	Sala Visai commune, Prasat Balangk district, Kampong Thom
8	CPA-Chup Tasok (Kulen National Park)	Khnang Phnom commune, SvayLeu district, Siem Reap
9	CPA-Prey Thom Anlung Thom (Kulen National Park)	Khnang Phnom Commune, Svay Leu District, Siem Reap
10	CPA-Prey Thom Popel (Kulen National Park)	Khnang Phnom Commune, Svay Leu District, Siem Reap
11	CPA/CF-Sang Sahakum Rokha Vorn (Sang Rokha Vorn Wildlife Sanctuary)	Trapeang Tav and Koun Kriel Communes, Anlong Veng district, Oddar Meanchey
12	CPA/CF-Ratanak Rokha (Sang Rokha Vorn Wildlife Sanctuary)	Samrong and Koun Kriel communes, Samrong municipality [district], Oddar Meanchey
13	CPA/CF-Samaki (Northern Biodiversity Conservation Corridor)	Trapeang Tav Commune, Anlong Veng district, Oddar Meanchey
14	CPA/CF-Thmorda O'Toek Khiev (Northern Biodiversity Conservation Corridor)	Ph'av commune, Trapeang Prasat district, Oddar Meanchey
15	CPA-Akphivoat Prey Veng (Kulen Promtep	Srayang commune, Kulen district, Preah Vihear

		Wildlife Sanctuary)	
	16	CPA-Sambo Akphivoat (Kulen Promtep Wildlife Sanctuary)	Srayang commune, Kulen district, Preah Vihear
	17	CPA-Pourieng (Kulen Promtep Wildlife Sanctuary)	Kulen Chheung commune, Kulen district, Preah Vihear
	18	CF-Prey Mloung	Srayang commune, Kulen district, Preah Vihear
	19	CF-Koh Ker Rik Chamroeun	Srayang commune, Kulen district, Preah Vihear
	20	CF-Prey Pou Mek Boun	Kulen Chheung commune, Kulen district, Preah Vihear
Date of Board meeting in which the FP is intended to be considered			
Date of accredited entity's Board meeting	N/A		
Date of GCF's Board meeting	Monday, March 13, 2023		

Note: This form was prepared by the accredited entity stated above.

Secretariat's assessment of FP199

Proposal name:	Public-Social-Private Partnerships for Ecologically-Sound Agriculture and Resilient Livelihood in Northern Tonle Sap Basin (PEARL)
Accredited entity:	Food and Agriculture Organization of the United Nations (FAO)
Country/(ies):	Cambodia
Project/programme size:	Small

I. Overall assessment of the Secretariat

1. The funding proposal is presented to the Board for consideration with the following remarks:

Strengths	Points of caution
An innovative climate-resilient agricultural asset acquisition mechanism that can give empowerment and ownership to farmers, while incentivizing them to take collective actions in business implementation.	

2. The Board may wish to consider approving this funding proposal with the terms and conditions listed in the respective term sheet and addendum IX, titled "List of proposed conditions and recommendations".

II. Summary of the Secretariat's assessment

2.1 Project background

3. The Northern Tonle Sap Basin (NTSB) is one of Cambodia's most important agricultural regions, yet it is highly vulnerable to the impacts of climate change. The Basin has experienced annual temperature increase by 0.8 °C since 1950, while precipitation is showing a general decreasing trend, with large inter-annual variability, particularly in the rainy season. The region is identified as one of the regions in the country most vulnerable to floods and droughts, which are expected to occur more frequently with increased intensity due to climate change. These anticipated climate change impacts will affect the key crops in NTSB, mainly cashew, mango, rice and vegetables.

4. The Public-Social-Private Partnerships for Ecologically Sound Agriculture and Resilient Livelihood in Northern Tonle Sap Basin (PEARL) project aims to tackle these identified impacts of climate change. The project proposes to transform the current agricultural production and processing practices in the NTSB into climate-resilient, high-value and sustainable production. The project will achieve this objective through three interlinked outcomes, namely: (1) climate foresight; (2) market incentives; and (3) enabling environment. The project will directly support 450,000 smallholder farmers and other actors involved in local value chains, reducing

the number of food insecure farmers by 60 per cent compared with the baseline, and restoring 7,600 hectares of tropical rainforests with improved ecosystems and ecosystem services.

5. The total project financing is USD 42,850,231, with a request for GCF grants of USD 36,231,981. Co-financing will be provided by Cambodia's Ministry of Agriculture Forestry and Fisheries (MAFF) of USD 3,690,000 as an in-kind contribution, with USD 2,258,250 as an in-kind contribution by the Ministry of Environment (MoE) and USD 670,000 as in-kind contribution by the accredited entity (AE), the Food and Agriculture Organization of the United Nations (FAO). The project is submitted under environmental and social safeguards Category B.

2.2 Component-by-component analysis

Outcome 1: Farmers' capacities are enhanced to manage climate impacts and related risks (total cost: USD 3.4 million; GCF cost: USD 3 million).

6. The first outcome will deliver an improved system of agrometeorological advisory services that are tailored to the project's target crops in seven critical areas. As analysed in the feasibility study, lack of reliable crop-specific agrometeorological forecasting and advisory services is one of the key barriers to carrying out adequate on-farm planning for farmers in the NTSB. As previous projects have worked on installing hydrometeorological stations in the country, the proposed activities to reach the "last mile" would be timely interventions to expand and scale up the existing efforts on climate information coverage.

7. The outcome will bring available Internet of Things technologies for data collection, processing and dissemination, including through the use of apps for mobile devices. While the outcome includes annual training for extension officers from various related government departments, it would be critical to provide targeted training support to farmers in the use and application of the generated data, and to provide advisory services for their actual on-farm planning. The outcome proposes to undertake this training through Farmer Field Schools and peer-to-peer knowledge-sharing. The proposed approach is deemed appropriate because the AE has built experience of taking the same approach elsewhere in Cambodia, and the farmers on the ground are best placed to share their expert knowledge among each other.

Outcome 2: Adaptive capacity of smallholder farmers and other local value chain actors, particularly vulnerable women farmers, is increased through market incentives that promote climate-resilient, higher-value, diversified and sustainable production and processing (total cost: USD 33.5 million; GCF cost: USD 28.2 million)

8. Outcome 2 comprises four outputs: (1) increased premium market access through agricultural certification programmes; (2) increased access to climate-resilient and high-value technologies; (3) demonstration and promotion of climate-resilient, high-value and sustainable agricultural practices and technologies; and (4) improved agroecological functions at the landscape level. The outcome will target in total 124 agricultural cooperatives, farmers associations, producer groups and agricultural unions, translating to roughly 24,000 farmers and other local value chain actors involved in the target value chains over the project lifetime.

9. The key result of this outcome is to facilitate access for smallholder farmers to premium markets for cashew, mango, organic rice and vegetables. The project proposes to achieve this outcome through supporting farmers to obtain certification[1] for organic production and processing. The project will also support farmers to develop sustainable business plans.

10. Another key result under this outcome is providing agricultural infrastructure to farmers through a climate adaptation asset acquisition mechanism, namely Farmer-led Agricultural Resilience Mechanism (FARM). Under FARM, GCF grants will be used to support

[1] For example, CamGAP, PGS, GI, SRP, ISO2200 and HACCP.

two areas of work: capacity-building for agricultural cooperatives, farmers associations and producer groups, to develop their financial literacy, entrepreneurial skills and business planning; the second area is to support the establishment of trust funds with local financial institutions to operationalize their business plans.

11. Extensive discussions have been held between the AE and the Secretariat on the mechanics of the FARM model, focusing on bringing in innovation through financial sustainability while keeping the model within the AE's accreditation boundary. Initially, a revolving type of fund was discussed and designed with a repayment arrangement in exchange for asset ownership for recipient farmers, so that collected repayment can be recycled to support additional beneficiaries. That design had to be modified to fit the project financial structure within the AE's accreditation limit: instead of a revolving fund, beneficiaries will set up their own trust funds with available local microfinance institutions, collect their own fees and run the trust funds for continuous implementation of their business plans. Although monitoring of such trust funds would be more challenging, as there are about 124 trust funds that will be set up, this arrangement is deemed to be the most feasible option under the AE's accreditation scope.

12. Overall, the outcome is critical to smallholder farmers to advance from their baseline to climate-resilient agriculture with value addition with greater opportunities to access premium markets. GCF's concessionality is justified, considering that the proposed activities are currently not deemed to be bankable by the private sector. NTSB is characterized by its high poverty rate and vulnerability to climate change, and its agricultural produce is losing value due to the lack of proper agricultural production and processing infrastructure. With technical assistance support being provided to the Agriculture and Rural Development Bank of Cambodia (ARDB), it is expected that the proposed project's activities will strengthen ARDB in widening its agricultural lending capability and that ARDB will take on the project activity by the end of the project (i.e. lending for procuring agricultural infrastructure).

Outcome 3: Regulatory and institutional frameworks and capacities for climate-resilient agricultural certification, cross-sectoral coordination for increased PSPPs and smallholder financing, and climate-informed investment support are strengthened. (total cost: USD 2.8 million; GCF cost: USD 2.2 million).

13. The final outcome will establish a clearing house to enable and foster innovation and knowledge-sharing, which will be a cornerstone of the exit strategy and will drive the process of scaling up into other areas of the country through sharing lessons learned. The outcome will introduce various training events, data collection and dissemination through various communication channels.

14. Knowledge products and experience gained during the project will help to foster future investments, and an innovative financial strategy will be developed to continue the work after the project ends, and so that the strategy can adapt and cater for future challenges while scaling up sustainable innovation and investments.

Project management (total cost: USD 2.0 million; GCF cost: USD 1.7 million).

15. The GCF portion of the project management cost is less than 5 per cent of the total requested GCF funding and is compliant with the GCF policy on fees.

III. Assessment of performance against investment criteria

3.1 Impact potential *Scale: N/A*

16. The project addresses the climate-induced challenges in one of the most vulnerable parts of Cambodia by boosting agriculture entrepreneurship and innovation across key value chains as well as increasing the resilience of poor and vulnerable farming communities.

17. The project will achieve these milestones by directly transforming the livelihoods of 450,000 direct beneficiaries and foster their access to finance, innovation and knowledge in the agriculture sector.

18. These transformations of the local food systems and their restructured farming systems will generate an opportunity to reach long-term sustainability in the target region and to scale up the interventions across similar landscapes and vulnerable areas of the country, primarily in the north-east and south-west.

19. Through the proposed FARM model the project will empower local communities to be able to transform their local food systems and be able to cope with future shocks and climate impacts, and continue to diversify and generate entrepreneurship and boost micro, small and medium-sized enterprises.

3.2 Paradigm shift potential *Scale: N/A*

20. The project proposes three innovative outcomes that, when implemented jointly, will offer a strong long-lasting opportunity to keep transforming the local food systems by targeting the current climate challenges and continuing to boost rural entrepreneurship while paving the way for the target region to become a diverse and economically sustainable local food system with clear scope for replicability in the country and in surrounding countries.

21. The targeted value chains offer a unique opportunity to further involve communities at the centre of their production and marketing while strengthening food security, job creation and sustainable management of natural resources.

22. The project proposes the FARM model that helps fill a current challenging gap in the region, providing access to finance and boosting micro-credit and future investments in the value chains and future niche products and markets. Through training and enhanced capacity, the targeted farmers will be able to take full ownership of how to transform their current farming systems and choose the necessary areas for investments and how to invest, not only during the project but through the established FARM model with long-term prospects.

23. The proposed FARM model is unique and offers a practical yet innovative approach to reaching the poorest and most vulnerable groups in Cambodia, and provides them with key opportunities to design solid environmental micro investments in the local food systems with long-term sustainable results to follow.

3.3 Sustainable development potential *Scale: N/A*

24. The project will deliver important solutions to boost socioeconomic benefits through the proposed FARM model and will provide access to finance and foster innovative investments. These will help to generate jobs, stimulate local growth and boost markets and development of new and improved commodities, and processing and storage, as well as generate numerous benefits for the target beneficiaries and indirect beneficiaries.

25. The project will support the design and implementation of innovative farming systems that will manage natural resources more sustainably, decrease the pressure on forests, and reduce water consumption and usage for rice production.

3.4 Needs of the recipient *Scale: N/A*

26. The project aims at supporting vulnerable community groups in north-west Cambodia, where livelihoods depend on the success and sustainability of local food systems.

27. Through the three innovative outcomes and proposed activities the project will be able to lift the communities out of the poverty challenges they currently face and support them to develop and increase resilient practices to cope with current and future climate shocks and impacts, and to boost their local food systems to provide opportunities to continue diversifying and reducing risks of food insecurity by establishing food systems and farming practices with innovative and strong species mixes.

3.5 Country ownership *Scale: N/A*

28. The north-west is an important region for food production in Cambodia but also one of the most climate vulnerable regions and the region with the country's highest poverty levels. The nationally determined contribution, as well as national strategies and plans in the agriculture sector, have identified the need to transform the local food systems and provide stronger, more-resilient solutions for the region to transform itself into a resilient and strong food system.

29. ARDB will play a crucial role in implementing the project and in guaranteeing access to finance to community groups during the project and in the long term by acting as the pathway, knowledge hub and platform to ensure that farmers can successfully transform their food systems.

30. Country ownership is fully embedded into all aspects of the project and the three outcomes, and is one of the cornerstones of successful implementation of the project.

3.6 Efficiency and effectiveness *Scale: N/A*

31. The project will work with the farming communities in one of the key food-producing areas of the country. The project offers a unique opportunity to boost and reinvent the local food systems to become more diverse through local micro investments along the supply chains, and by continuing to identify opportunities to boost the quality of commodities through better processing and storage as well strong involvement of the local and international private sector.

IV. Assessment of consistency with GCF safeguards and policies

4.1 Environmental and social safeguards

32. **Project Brief.** The project aims to enhance the climate change resilience of smallholder farmers and local communities in the Northern Tonle Sap Basin (NTSB) of Cambodia by increasing their access to the premium market segments while using their improved market access to incentivize their transition to climate-resilient practices, mainly through effective public-social-private partnerships (PSPP). Among the project's co-benefits include improved soil quality through better residue management, enhanced agroecological conditions and ecosystem services through better processing and postharvest quality control and forest protection and restoration activities in the catchment areas.

33. **Environmental and social risk category.** The AE has assigned the project an environmental and social (E&S) risk category of Category B based on its screening of the project's activities. The Secretariat agrees with this categorization given that actual ground

interventions are small scale and spread out and are intended to be ecologically sound and sustainable. The risk category is also within the AE's environmental and social risk accreditation level. The environmental and social risks for activities involving restoration works and agricultural production will be "moderate" through careful selection of Community Protected Areas (CPA) and Community Forest Areas (CFA) sites, and the application of proven best practices (such as the Restoration Opportunities Assessment Methodology, ROAM) among others, and the screening and exclusion of high-risk activities (through the adoption of an Exclusion List). Overall, the residual environmental and social risks and impacts are highly localized and limited in footprint, largely reversible, and can be readily addressed using recognized standard management practices.

34. **Safeguards Instrument.** The AE has prepared an Environmental and Social Management Framework (ESMF). The ESMF is the appropriate instrument for this project as site-specific production activities/value chain investment plans under Farmer-led Agricultural Resilience Mechanism (FARM), and the watershed restoration works will have to be identified and developed through participatory processes with the beneficiaries during project implementation. An Environmental and Social Management Plan (ESMP) will be prepared once the activity and site-specific risks and impacts are identified.

35. **Compliance with the GCF Environmental and Social Safeguards (ESS) standards.** The paragraphs below describe the project's compliance with the GCF's ESS standards:

36. **ESS1 (Assessment and Management of Environmental and Social Risks and Impacts).** The ESMF provides a general assessment of the E&S risks and potential impacts of the project and sets out the procedures for assessing and managing the risks and impacts of the various site-specific interventions which will still be identified and developed with the beneficiaries as part of the project implementation. The ESMF provided information about the baseline conditions of the physical environment (i.e., climate, geology, and soil), biodiversity, forest, land use, protected areas, agriculture, and water resources, poverty, and indigenous groups. The ESMF also describes the process for assessing and managing the E&S impacts and risks of individual project activities or sub-activities. The process consists of three (3) main steps: (1) activity identification; (2) E&S screening; and (3) preparation, implementation, and monitoring of the environmental and social management plan (ESMP).

37. **ESS2 (Labour and Working Conditions).** The ESMF indicated that the project will not involve direct hiring of workers. Nevertheless, depending on the place and types of work in the farm and value chain enterprises and in the restoration works supported under the project, workers may be exposed to occupational health and safety (OHS) hazards. For instance, workers in watershed restoration and protected areas may be exposed to hazards associated with working in mountainous terrain, steep slopes, marshes, hazards from wild and poisonous animals, parasites, and vector-borne diseases. Workers in construction activities may also be exposed to construction- related OHS hazards while workers in the processing sector may be exposed to various other hazards such as repetitive motion, sharp tools, high temperature, among others. As these labor and working conditions issues will be activity-specific, the scope of the E&S screening and assessment and the formulation of relevant management measures will have to be tailored during project implementation. The project will also conduct training and support activities to trainers and extension staff supporting the implementation of activities that will include information on OHS good practices, protocols and equipment. The project will likewise provide training to project beneficiaries involved in the establishment of forest rehabilitation, agroforestry systems, and sustainable agricultural activities. Moreover, the project will ensure that labour and working conditions will not include harmful child labour, involuntary or compulsory labour, or significant occupational health and safety issues.

38. **ESS3 (Resource Efficiency and Pollution Control).** The project is not expected to use large amounts of fuel, electricity, or raw materials and instead promote water conservation/ management practices, pollution control and invest in energy-efficient facilities (e.g. solar-

powered storage facilities). The project is expected to promote climate-smart irrigation systems (e.g. drip irrigation and ponds) and develop schedules to optimize water resources. The sustainable land management practices that will be promoted by the project are also envisaged to prevent or minimize land degradation, through soil erosion control strategies. The risk related to pesticides use is also low given that the project will promote integrated pest management and will not result in the procurement or direct supply of pesticides or agrochemicals. The project will also develop guidelines and provide support to farmers to reduce their pre-existing use of pesticides based on international and local best practices. Good practices will also be integrated in the production/processing activities through the promotion of agricultural certification programs such as the Organic Certification, the Cambodia Good Agricultural Practices (CamGAP), the International Organization for Standardization (ISO) 22000 on Food Safety Management System, and Hazard Analysis Critical Control Point (HACCP) principles.

39. **ESS4 (Community Health, Safety and Security).** The project will involve members of the communities working and living near or within the CPAs and CFAs. Hence, communities could be exposed to health and safety hazards from the project's activities such as in the restoration works in these areas, the construction of small infrastructure and enterprise facilities, and in the production and/or operation of the facilities. These could include construction related hazards at construction sites, pesticide residue poisoning (in instances where pesticides may still be used), and accidental exposure to unexploded ordnance (UXO). While the ESMF outlines the overall risk mitigation framework, more detailed assessments and preparation of the ESMPs will be done at the activity level once the specific beneficiary groups and locations are identified and should ensure that the above issues are identified and provided with appropriate mitigation measures, as needed.

40. **ESS5 (Land Acquisition and Involuntary Resettlement).** The ESMF rules out any involuntary resettlement or displacement impacts from the project since it "will not support activities that result in a negative change to existing legitimate tenure rights" and "will not involve the involuntary resettlement of households or activities that may involve physical displacement..." or "…economic and occupational displacement…" as provided in the project exclusion list. The project will also collaborate with agricultural cooperatives and unions that have clear and identified production areas and work in CPAs and CFAs that have adequate demarcations and legal recognitions. Nevertheless, an ESMP will be prepared once specific interventions and sites have been identified to ensure that no groups will be displaced from their lands or have their tenure rights negatively affected. The project will also adhere to the principles of the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (VGGT) to clarify usufruct and tenurial rights.

41. **ESS6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources).** The project is designed to promote ecologically sound management of land resources. The project will also exclude the following activities: (a) activities that result in increases in areas under cultivation within protected areas; (b) activities that support the direct supply of agrochemicals; (c) activities that support the clearing of native forests; and (e) activities that use non-locally adapted species. In addition, a Biodiversity Management Framework (BMF) has been provided in the ESMF that describes how the target CPAs and CFAs will be carefully selected in terms of management capacity, clear delineation of boundaries, and approved management plans, among others. It has also identified three main risks namely: (1) expansion of production areas in the CPA/CFA; (2) site-specific effects of agricultural activities; and (3) introduction of alien invasive species; and outlined how these will be addressed in the project, including subjecting each intervention to E&S screening using FAO's Screening Checklist. Based on the result of the screening, an ESMP will be developed and will be monitored throughout the implementation phase.

42. **GCF Indigenous Peoples Policy and ESS 7 Indigenous peoples.** At this stage specific activities have not been determined, so the AE has included an indigenous peoples and social inclusion planning framework (IPSIPF) within the environment and social management framework. The IPSIPF includes some general baseline information for indigenous peoples that are present in the project target provinces, analysis of the legal framework, and an identification of potential project impacts. These impacts are summarized in section 8 of the funding proposal as risks from (1) exacerbating inequalities, (2) exclusion and (3) pressure on indigenous peoples' lands. Information is included in the IPSIPF to guide the process of screening and preparation of an indigenous peoples plan in the future, if this were needed, as well as guidance on meaningful consultations and free, prior and informed consent (FPIC) during project implementation. In line with their roles and functions, the Indigenous Peoples Advisory Group is available to provide advice to the accredited entity and executing entities.

43. **ESS8 (Cultural Heritage).** The ESMF addresses potential project impacts on cultural heritage within the context of indigenous peoples as regards ensuring that associated traditional knowledge are respected and benefits accruing from their use is shared. However, given the countries richness in cultural and historical heritage, the screening of the activities under the project should ensure that information about the location and status of both tangible and intangible cultural heritage with respect to the target areas should be assessed in terms potentially being adversely affected by project activities. Management measures including avoidance through eligibility screening or excluding support for developments near such sites, as well as the involvement of experts and authorities apart from communities in formulating any cultural heritage conservation plans, if necessary, should also be considered.

44. **Sexual Exploitation, Sexual Abuse, and Sexual Harassment (SEAH).** The ESMF has identified potential gender-based violence (GBV) and SEAH risks linked to the overall nature of the project and its implementation. That is while enhancing the adaptive capacity of smallholder farmers and other local value chain actors, it may also create power imbalances across project personal and between project personnel and the target beneficiaries, specifically when project beneficiaries accessing project activities, mobility of women and other beneficiaries increases, and contract farming agreements are created. The ESMF presents the common risks and mitigation measures to address the potential SEAH risks and impacts of the project. It also requires that specific SEAH risks be screened and addressed at sub-activity level guided by AE's new framework for environmental and social management (FESM) which has explicit reference to SEAH. While the ESMF presents key mitigation measures on SEAH including to ensure the SEAH risks screening and mitigation of sub-activities, with focus on measures to reduce vulnerability and provide training to participants on SEAH risks; enhance awareness on gender roles; and improve access for SEAH and GBV related grievances in the grievance redress mechanism (GRM) established at the project level, there is no specific procedure nor referral pathways to assure survivor-centred and gender-responsive redress on SEAH incorporated in the project GRM and nor the GRM of FAO representation in Cambodia. As specific operational guidance on SEAH is being developed at the AE's corporate level following to the recent adoption of its FESM, the AE is recommended to specify specific SEAH procedures in the project GRM and make AE's GRM at the institutional available to address SEAH in addition to other environmental and social impacts of the proposed activities.

45. **Implementation Arrangements.** The ESMF discussed the implementation arrangements for the project which involve the establishment of a Project Steering Committee (PSC) comprising of representatives from relevant ministries, to be co-chaired by FAO and MAFF. The PSC's main responsibility will be to provide strategic guidance and support coordination among government institutions and will provide general oversight for the implementation of the project. A PMU will also be established and will be responsible for, among others, ensuring the implementation and monitoring of day-to-day activities, implementing effective stakeholder engagement, and safeguarding the project and its beneficiaries. A National Safeguard Specialist to lead the project's effort in mitigating negative

social and environmental impacts will also be engaged and Safeguard Officers will act as a focal points to receive grievances or feedback through various modalities. A workplan and budget for the ESMF implementation including the preparation of relevant management plans is likewise provided.

46. **Stakeholder Engagement and Information Disclosure.** The project proposal development was informed by several studies which had strong stakeholder engagements. During implementation, regular stakeholder consultations will continue to inform stakeholders of the project´s progress, support capacity building and awareness raising, validate findings and present results, among other topics. At the project level, FAO and MAFF will provide regular updates (in Khmer and English) on the progress of the project through their website and other media including print, radio, reports, and presentations. Stakeholders will also be invited to participate in PSC meetings. The project puts strong emphasis on participatory approach and all ground activities will be developed with the beneficiaries through consultations and workshops.

47. **Grievance Redress Mechanism (GRM).** A project-level grievance system has been devised which will be integrated within the Grievance Review Mechanism of the FAO in Cambodia. Grievances will first be resolved at the PMU level with the project safeguards officer operating as the focal point for receiving, compiling, screening, recording, and working with other PMU members to address the grievance. The grievance will also feature multiple means of lodging complaints (e.g., email, internet messaging, phone, in writing, as well as in person). The Safeguards Officer and PMU will also provide regular (quarterly) updates to the Country Officer Grievance Review Operator of all grievances raised and actions taken to resolve them. Stakeholders will also have access to the AE's grievance redress mechanism through the Office of the Inspector-General (OIG) which has the mandate to independently review the complaints that cannot be resolved at the project level. In line with the GCF Indigenous Peoples Policy, the GCF indigenous peoples focal point will be available for assistance at any stage, including before a claim has been made.

4.2 Gender policy

48. The AE has provided a gender assessment and gender action plan and therefore complies with the requirements of the GCF Updated Gender Policy.

49. The gender assessment describes the gender issues at the country level and indicates the existence of the national policy environment, supportive legislation and practices to promote gender equality, and describes Cambodia’s commitment to gender equality and women’s empowerment. The Government of Cambodia is committed to gender equality and women’s empowerment. This is guaranteed through the 1993 Cambodian Constitution and through initiatives such as the ratification of the convention on the Elimination of Discrimination against Women (CEDAW); the national strategic plan that places great importance to strengthening women’s empowerment and gender equality while also supporting addressing the impacts of climate change on women; and the Cambodia Climate Change Strategic Plan 2014–2023, which aims to reduce gender vulnerability and risks from climate change impacts as well as to ensure services address the needs of local communities, ethnic minorities and other vulnerable groups. The second Gender and Climate Change Action Plan 2019–2023, and a master plan for gender and climate change (2018–2030) are being used as a roadmap for formulating the projects and programmes by the Ministry of Women’s Affairs (MoWA). MoWA takes the role of promoting gender equality and women’s empowerment in all sectors; at the same time all sectors, non-government institutions and the private sector are expected to advance the commitments expressed in the national strategic plan. MoWA’s Gender and Climate Change Committee is developing the capacity of relevant institutions at all levels on gender mainstreaming with reference to climate change.

50. The assessment was undertaken through a desk review and stakeholder consultations. It confirms the disproportionate impacts of climate change on Cambodian women farmers. It attributes this to various issues, such as limited knowledge of and access to climate-related information; limited access to extension services, finance, productive resources and technologies; lower rates of literacy and mobility among women; lower levels of involvement in decision-making by women; and limited access to training. Women are less mobile, and women's representation in decision-making remains low especially in rural areas and more pronounced for women of ethnic minority. The majority of Cambodian rural women work in agriculture on their own land or carry out unpaid agriculture work. Skewed norms (i.e. practices that are not necessarily equally shared) allow limited space for the active engagement of women in various tasks. In addition, evidence from the stakeholder consultation indicated that women do not feel confident and capable of being leaders of agricultural cooperatives owing to lack of capacity and their busy daily household and care work, while in general, men are considered appropriated for that task due to their higher chances of mobility, access to information and so on. However, the fact that women's access is limited does not take away from the critical role and contributions that women play within their societies. They play a crucial role in the agriculture sector, particularly in food and nutrition security for their households. They also play a central role in wholesale and retail marketing of agriculture products; as collectors, and/or local traders; and as the principal retail sellers, working in markets at the local, provincial and national level, with active roles in input supply agrobusinesses, and providing information and knowledge on the use of inputs, fertilizers and pesticides.

51. Based on the initial assessment conducted, the AE has developed a gender action plan with activities aimed at addressing the various challenges women face in the production and marketing of agricultural produce. The gender action plan includes baseline, indicators, targets, timelines, gender expert and budgets. However, many of the interventions currently included in the gender action plan are broad, so more specific and targeted interventions will be developed as part of project implementation once specific target agricultural cooperatives and community protected areas (CPAs) have been identified. Actions within the broad framework include ensuring access to agrometeorological services to women; ensuring access to information and market opportunities; introducing changes in the agricultural system to address the concerns and issues of women; and introducing an approach (known as the "W+ standard") which would provide a mechanism for the project to monitor impact and a means by which beneficiaries can gain increased market access as well as direct financial support. The standard will ensure appropriate measures are in place to address violence against women and sexual exploitation, abuse and harassment issues, such as the grievance and redress mechanisms focusing on prevention and redress. The actions listed in the assessment are well aligned with the Cambodian Climate Change Action Plan for Agriculture, Forestry and Fisheries, the national strategy, and the second Gender and Climate Change Action Plan.

52. A revised gender action plan, based on further assessments, is expected to be submitted to the Secretariat. The refinement of the gender action plan will enable the AE to identify activities that will make it possible to address specific and structural gender issues, such as (but not limited to) access to mobile phones, finance, technologies, leadership skills as well as actions towards female-headed households and other vulnerable groups in the communities of focus. The Secretariat also expects lessons to be gathered and documented on the application, benefits and challenges of the W+ approach that is being explored in the project.

4.3 Risks

4.3.1. Overall programme assessment (medium risk)

53. The total financing is USD 42,850,231 of which USD 36,231,981 is GCF grant financed. Co-financing is in-kind totalling USD 6,618,250: of which USD 3,690,000 by the Government of

Cambodia through the Ministry of Agriculture Forestry and Fisheries (''MAFF''), of which USD 2,258,250 by the Government of Cambodia through the Ministry of Environment (''MoE''), and of which USD 670,000 by the Accredited entity. We note that co-financing ratio is 0.18 to 1 and 15% of total financing.

4.3.2. Accredited entity/executing entity's capability to execute the current programme (low risk)

54. FAO will act in its capacity as the Accredited Entity, and also executing entity for some of the activities. FAO is the agency in the United Nations system that is specifically involved in agriculture issues. FAO has an extensive track record in the implementation of projects in developing countries including GCF projects.

55. MAFF and MoE demonstrate experience as executing entities in another GCF project currently under implementation (FP076 | Climate-Friendly Agribusiness Value Chains Sector Project) and FAO has performed a capacity assessment carried out under the United Nations on these two entities and the results did not include any major issues in relation to executing entity's ability to carry out the project activities.

4.3.3. Project-specific execution risks (medium risk)

56. Most of the co-financing will be ultimately provided by the Government of Cambodia through MAFF and MoE, and is entirely in-kind which may involve technical and operational risks. In-kind contribution is in form of staff time, office space and facilities, noting that in-kind contribution will be finalized in the final business plan in agreement with local financial institutions.

57. Under outcome 2: Adaptive capacity of smallholder farmers and other local value chain actors, particularly vulnerable women farmers, is increased through market incentives that promote climate-resilient, higher-value, diversified, and sustainable production and processing, as of now there is a lack of clarity on legal and contractual arrangements to be entered into for execution of the Farmer-led Agricultural Resilience Mechanism (FARM) mechanism.

4.3.4. Project viability and concessionality

58. Under outcome 2: Adaptive capacity of smallholder farmers and other local value chain actors, particularly vulnerable women farmers, is increased through market incentives that promote climate-resilient, higher-value, diversified, and sustainable production and processing, while the amount is small (1% of GCF funding) the project activities will finance feasibility study and capacity building to help insurance providers better understand climate risks and develop more tailored insurance products. As a result, the project will ultimately benefit farmers: it will increase farmers' awareness of the available financial support products to improve their financial access within the insurance scheme called National Crop Insurance Program, led by MAFF. GCF concessionality is justified as proposed adaptation actions are not deemed to be bankable by the private sector at the current stage, as well as the project will not finance the insurance scheme.

4.3.5. GCF portfolio concentration risk (low risk)

59. If approved, the impact of this proposal on the GCF portfolio concentration in terms of result area and single proposal is not material.

4.3.6. Compliance risk (high risk)

60. The beneficiary country, Cambodia, is not subject to United Nations Security Council (UNSC) restrictive measures. The AE has confirmed that project activities and its related counterparties do not pose significant risks with respect to UNSC sanctions. The AE, along with MAFF and MoE, will act as the executing entity (EE). The AE has performed a comprehensive capacity assessment on these two ministries and the results did not include any major issues in relation to the EEs' ability to carry out the planned activities. Considering all capacity-related matters, the AE assessed its exposure to both EEs at a moderate risk. The project contains an outcome of directly distributing agricultural assets to beneficiaries through FARM. The AE confirmed that, for this specific element, the provisions in its manual (including those on beneficiary selection and asset transfer) will be implemented to mitigate potential misuse of assets. In addition, the AE's Whistleblower Protection Policy will be also implemented to allow for prompt reporting of any irregularities that may occur throughout the funded activity. The AE has assessed that money laundering, terrorist financing, prohibited practices and sanctions-related risks are of low probability and high impact. The Office of Risk Management and Compliance (ORMC)/Compliance Team notes that Cambodia continues to be listed by the Financial Action Task Force as a jurisdiction with strategic deficiencies in its anti-money-laundering and countering the financing of terrorism (AML/CFT) regime and, taking into consideration this high exposure, it is recommended that enhanced due diligence and controls be embedded in all project activities. The ORMC/Compliance Team has conducted a review of the project in accordance with relevant GCF Board-approved policies and does not find any material issue or deviation with respect to compliance issues. Based on available information for this funding proposal, the ORMC/Compliance Team have determined a risk rating of 'high" and has no objection to this request proceeding to the next steps for processing.

4.3.7. Summary risk assessment and recommendation

Summary risk assessment	
Overall project/programme	Medium
Accredited entity/executing entity capability to implement the project/programme	Low
Project-specific execution	Medium
GCF portfolio concentration	Low
Compliance	High

4.4 Fiduciary

61. FAO will serve as the Accredited Entity (AE) for this project and also act as the Co-EE.

62. FAO will be responsible for the overall management of the project, including i) all aspects of project appraisal; (ii) administrative, financial and technical oversight and supervision throughout project implementation; (iii) ensuring funds are effectively managed to deliver results and achieve objectives; (iv) ensuring the quality of project monitoring, as well as the timeliness and quality of reporting to the GCF; and (v) project closure and evaluation. FAO will ensure these responsibilities in accordance with the detailed provisions outlined in the Accreditation Master Agreement (AMA) between FAO and GCF.

63. Royal Government of Cambodia will serve as the Executing Entity (EE), acting through MAFF (Ministry of Agriculture, Forestry, and Fisheries) and MoE (Ministry of Environment) and

FAO to deliver the project activities. FAO as co-EE will ensure strong country-driven executing on project activities and execute the in-kind contribution from the FAO (LDCF and IW/GEC) and will also oversee the execution of selected activities funded by GCF proceeds based on its comparative advantages.

64. A dedicated Project Management Unit (PMU) will be established and hosted by MAFF in Cambodia. The PMU will be functional for the entire duration of the project. The PMU will coordinate directly with EEs and project stakeholders and will be responsible for providing support to the execution of day-to-day activities the technical quality of the project outputs, effective stakeholder engagement.

65. A Project Steering Committee (PSC) will be established to provide strategic guidance of the project. The PSC will be co-chaired by MAFF and FAO-Cambodia.

66. FAO will execute the project in accordance with FAO rules, regulations, policies and procedures. Financial management and procurement under this project will be guided by relevant FAO rules and regulations as relevant provisions in the Accreditation Master Agreement (AMA) signed between FAO and GCF.

67. Financial management and procurement by the two co-EEs will be overseen and supervised by the FAO-GCF project supervision team as per the FAO Operational Partners Implementation Modality (OPIM). The FAO-GCF project supervision team will undertake regular supervision missions and recruit a qualified, internationally recognized auditing firm to perform frequent spot checks and audits to ensure financial management and procurement by the PMU and co-EEs are being conducted in line with agreed standards and practices. The AE fee will bear the costs of assuming the audit and spot check responsibility.

4.5 Results monitoring and reporting

68. The theory of change (TOC) clearly defines the project goal. The TOC's goal statement and the various levels of the results chain have been improved to more clearly articulate how the proposal's climate-resilient value chain approach and premium price market approach will address adaptation needs. The assumptions capture the most important factors underlying the achievement of results including how to sustain the benefits of the project. The barriers have been articulated and linked with the relevant set of activities to which each of these barriers respond.

69. The logframe has been designed with relevant details, as per the GCF Integrated Results Management Framework (IRMF). The selected GCF result areas and IRMF indicators will enable the project to capture and report on mitigation and adaptation outcomes. In particular, the project will report against Core Indicator 2 Direct and indirect beneficiaries reached; Supplementary 2.1: Beneficiaries (female/male) adopting improved and/or new climate-resilient livelihood options; Supplementary 2.2: Beneficiaries (female/male) with improved food security; and Supplementary 4.1 Hectares of terrestrial forest, terrestrial non-forest, freshwater and coastal marine areas brought under restoration and/or improved ecosystems.

70. At the GCF outcome level, the AE has strengthened the means of verification for the IRMF indicators, as the Secretariat suggested. The means of verification combine where possible primary and secondary data sources, and qualitative and quantitative sources.

71. At the output level, the logframe has been streamlined to focus only on output-level indicators, while the rest will be monitored at the activities level.

72. A few baseline figures at the outcome and output levels will be updated after a planned baseline study during the inception phase. Across the results level, the AE will need to ensure that the unit of analysis that it will specify for the baseline will match the unit of analysis of the mid-term and final targets.

73. The M&E Plan in Annex 11 sets out the data collection techniques for each indicator as well as the indicative budget for each. The AE provided the required clarifications related to the total costs for independent evaluative data collection costs, which have been consequently reflected on a separate budget line in Annex 4 Project Budget in line with the requirements of the Evaluation Policy.

74. The Evaluation Plan will deliver an interim evaluation and a final evaluation consistent with the requirements of the Monitoring and Accountability Framework and Evaluation Policy. The separate provision for evaluative data collection activities in the project budget and the increased evaluation budget as part of the AE fees provide the assurance that the AE will deliver interim and final evaluations that meet the requirements of the IRMF and the Evaluation Policy.

4.6 Legal assessment

75. The accreditation master agreement was signed with the AE, and it became effective on 4 October 2018.

76. The AE has provided a legal opinion/certificate confirming that it has obtained all internal approvals and that it has the capacity and authority to implement the project.

77. The proposed project will be implemented in Cambodia, a country in which GCF is not provided with privileges and immunities. This means that, among other things, GCF is not protected against litigation or expropriation in this country, which risks need to be further assessed. A draft privileges and immunities agreement and background note were sent to the national designated authority of Cambodia by courier and received by the national designated authority on 30 August 2017. Negotiations on the draft privileges and immunities agreement have not commenced.

78. The Heads of the Independent Redress Mechanism and Independent Integrity Unit have both expressed that it would not be legally feasible to undertake their redress activities and/or investigations, as appropriate, in countries where the GCF is not provided with relevant privileges and immunities. Therefore, it is recommended that disbursements by the GCF are made only after the GCF has obtained satisfactory protection against litigation and expropriation in the country, or has been provided with appropriate privileges and immunities.

4.7 List of proposed conditions (including legal)

79. In order to mitigate risk, it is recommended that any approval by the Board is made subject to the following conditions:

(a) Signature of the funded activity agreement in a form and substance satisfactory to the GCF Secretariat within 180 days from the date of Board approval; and

(b) Completion of the legal due diligence to the satisfaction of the GCF Secretariat.

Independent Technical Advisory Panel's assessment of FP199

Proposal name:	Public-Social-Private partnerships for Ecologically-Sound Agriculture and Resilient Livelihood in Northern Tonle Sap Basin (PEARL)
Accredited entity:	Food and Agriculture Organization of the United Nations (FAO)
Country/(ies):	Cambodia
Project/programme size:	Small

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential *Scale: Low*

1. Cambodia is located in South East Asia, on the south-western part of the Indo-China peninsula. It is a low-lying country and rich in water resources. The country houses predominantly an agrarian society, owing to its ecological endowment. The country is served by the Mekong River, which supplies freshwater, while the South East Asian monsoon brings in additional quantum of freshwater through its annual cycle. Although there exists a considerable temporal as well as spatial distribution of rainfall within Cambodia, the availability of freshwater helps sustain crop agriculture in the country.

2. In recent times, Cambodia made great strides towards economic growth. Since 2004, the country's gross national income (GNI) tripled to reach USD1,380 in 2018. Published literature suggests that much of this growth may be attributed to export earnings, increased lending, public and private investments in various sectors, and favourable microeconomic policies. Agriculture sector is dominated by crop production. This sub-sector has experienced significant growth during 2004-2012, mostly due to rapid expansion of area under cultivation. The expansion potential has reached almost a plateau starting 2013, which is why the growth rate in crop sub-sector declined with respect to that during 2004-2012.

3. Starting 2008-2009, Cambodia has focused on greater value addition in crops. The country has started to move away from business-as-usual (BAU) rice production which was predominantly for local market, to find niche export market for aromatic rice, grown organically. The short-life BAU rice areas has started to transform into organic rice areas, the product being fragrant, lower yielding but capable of bringing home higher income for the farmers. In similar fashion, where environmental endowment is found favourable, cashew is grown in orchards to catch international market. Mangoes are also being grown for export as well as for local markets, looking for organically produced special variety of mangoes with a premium price. Meanwhile, local hospitality industry placed much higher demands for premium quality organically grown vegetables, again the farmers moved away from rice based farming to respond to the growing niche markets for organically grown products to fetch premium price.

4. The premium-priced aromatic rice found a readily available export market in China, the smallholder farmers found it relatively easy to cope with post-harvest of rice, even establishing value chain for aromatic rice, due to their millennia-old acquaintances involving rice farming. In terms of total production, they accepted the apparent decline in yield involving aromatic rice, while the transformation promised them greater economic returns due to achieving premium

price. However, the farmers could not readily access the growing international market for cashew, due to lack of know-how, adoption of technology, inadequate investment and lack of proper value chain. Most of the cashew grown in Cambodia is sold at respective farm gates in bulk to traders, which eventually go to neighbouring countries, where better post-harvest facilities and value chains are established and the premium price is generally skimmed by the middle actors.

5. There is no denying the fact that the GNI of the country has reached USD1,380 in 2018, but the country still belongs to the Least Developed Country (LDC) group. In 2009, the rate of poverty was 40 per cent, which has been brought down to 17.8 per cent in 2020. There exists a disparity between rural and urban poverty rates: the poverty rate in urban areas is 12.6 per cent while that the capital city Phnom Penh is only 4.2 per cent. The relatively higher rates of poverty in the rural areas may be attributed to high rates of engagement in crop agriculture, which offers employment to 60 per cent of the population living in rural areas. Apart from rice, the country's staple accounting for about 80 per cent of Cambodia's crop production, there are other important crops: cassava, maize, soybean, mung bean and other crops. Cambodia is famous internationally for growing black pepper, grown mostly in the southern coastal areas.

6. Cambodia is also vulnerable to climate change. There are changes in the climate system. The average surface temperature has risen by 0.8°C between 1950 and present time. The most rapid rise has been recorded in the peak dry season, while the slowest increase is recorded in the peak wet season. The average annual rainfall varies between 1,000 and 1,500 mm. The annual rainfall distribution brings in little rainfall during the long dry season.

7. It is claimed that the micro-structure of rainfall pattern in Cambodia has been changed, which is exhibiting an early departure of the season resulting in extension of the dry period. short rainfall bursts due to intensification of rainfall episodes during peak rainfall months (July-September) and relatively lesser intensity during early parts of the rainy season. The funding proposal could not do justice to present meteorological analysis and evidence base to establish such claims. Despite the fact that the country has an official hydro-meteorological data repository, having long-term daily data sets concerning temperature and precipitation (i.e, rainfall). The funding proposal reportedly could not have access to such data and it resorted to citation of one article, which did not utilize official observational data. Because of non-availability of data, no significant temporal trend analysis regarding climatological phenomena could be presented. Available literature suggests that the country's subtle changes in climatological parameters have already started to affect crop agriculture.

8. According to inter-governmental panel on climate change (IPCC), the dry season rainfall availability combined with rise in surface temperature will tend to increase seasonal aridity, which may be found in an analysis involving evapo-transpiration. Although a shorter epoch of 20 years was chosen wrongly in a bid to establish linkage with climate, the funding proposal presented an analysis involving Standardized Precipitation and Evapo-transpiration Index (SPEI) to exhibit the presence of drought in Cambodia. High intensity rainfall during peak rainy season is likely to trigger both flooding and greater extent of sedimentation due to soil erosion, which might have significant detrimental effect on crop production in the downstream areas.

9. Apart from rainfall-related hazards, a rise in surface temperature is already found. Although the evidence base is extremely weak and not based on observation data, the surface warming has been found to increase the number of occurrences of reaching temperature thresholds (such as number of days reaching temperature above 33, 35 or 36°C). Depending on crop growth stages, temperatures above certain optimum threshold may cause problems in terms of pollination efficiency, water transport ability, growth, wilting, etc. Eventually, crop yield is found to suffer due to such incidences.

10. The projection of future climate with respect to baseline of 1980-2005 is derived from Coupled Model Inter-comparison Project's fifth stage experiment (CMIP5) outputs resolved for

near future timeline of 2011-2040 using IPCC-promoted scenario of Representative Concentration Pathway 4.5 (RCP4.5). The downscaling was done by Coordinated Regional Downscaling Experiment (CORDEX). Six CMIP5 models were run on a coarse domain (i.e, using 0.5 degree grid size), however no attempt was taken for examining model efficiency by conducting model inter-comparison experiments. Since the projection on rainfall availability and moisture stress are the key indicators for defining the project, greater rigour in modelling exercise could have given reliable future climatology and impacts.

11. The modelling outputs exhibit much prominent rise in temperature, with more frequent exceedance of temperature and heat stress thresholds, although the extent of which is supposed to increase with much increased concentration of greenhouse gases in the atmosphere. The annual average rainfall is expected to increase only slightly in near future (i.e, 2011-2040), however such a slight increase will not be able to dent rising evapo-transpiration, resulting in increased moisture stress.

12. In terms of current crop agriculture, the model outputs indicate the following risks associated with climate change in the near future: (a) the heat stress due to ambient temperature might affect crop growth and yield potential, however the extent of which in near future will only be negligible; (b) increased reference evapo-transpiration might induce water stress for crops, especially for wet-season aromatic rice, only negligibly at the plant establishment stage of growth; however the growing evapo-transpiration before harvest might require supplementary irrigation, as the available rainfall late in the season might not be appreciable; (c) increase in flooding, especially occasional flash flood due to sudden swelling of the Mekong River as a consequence of upstream rainfall runoff can have detrimental effects on crop yield; (d) the increase in surface temperature might require cool chain facilities for the vegetables and even for mango after summer harvests, which might reduce chance of early rotting of such perishable produces.

13. The project aims at increasing crop-resilience and simultaneously addressing the issue of post-harvest and marketing by establishing value chains so that the smallholders, including women producers get higher financial returns from premium products and the country can have greater export earnings. By choice, the project targets four northern Tonle Sap Basin (NTSB) regions with distinct product orientation: (1) the north-central region of Preah Vihear, which is a known aromatic rice producing area; (2) the north-western region of Oddar Meanchey, which houses the high value mango orchards; (3) the Siem Reap region north of the Tonle Sap lake, which is known for high value vegetables; and (4) the Kampong Thom region just south of Preah Vihear, the region being the major centre for producing cashew. The relative productivities of the dominant region-specific products are generally higher than that for the rest of the country. However, the level of poverty in these target regions is found to be generally higher than that for the rest of the country. As such, the funding proposal has not provided accounts of climate related vulnerabilities of these target regions to justify their inclusion, however the higher rates of poverty such as in Oddar Meanchey provides for a weak justification of considering a climate change related project in these target regions.

14. From the weak targeting of project locations, the approach of the project is found to be away from addressing either “exposure to climate change induced hazards in agriculture” or “sensitivity to climate change induced hazards” to build adaptive capacity mostly through awareness and capacity-building actions and by increasing ability to market premium products so that the producers get a fair share from premium price of specific products. By examining various activities of the proposed project, one may infer that the primary target of the project is to enable the smallholder farmers to earn more and for the government to earn from export, not so much to reduce climate change induced vulnerabilities, as indicated in paragraph#12 above. In addition to the elements of vulnerability mentioned above, one may expect a shift in seasonal pattern. However, the project will not connect agricultural research in a bid to develop varieties that are adjusted to shifts in seasonal pattern so that smallholders can switch to alternate

varieties as and when necessary. It appears rather obvious that, if the current production system involving the four target crop types get affected due to increased exposure and sensitivity to changes in climate system, the intended advisory, awareness, training, capacity-building and strengthening of marketing skills will not be of much use towards reducing vulnerability.

15. The project has three following target outcomes:

(a) Outcome 1: Availability and access to agrometeorological advisory services tailored to target value chains improved among smallholder farmers and local; value chain actors, particularly women farmers and value chain actors;

(b) Outcome 2: Adaptive capacity of smallholder farmers and value chain actors is increased through market incentives; and

(c) Outcome 3: Regulatory and institutional frameworks and capacities are strengthened.

16. The independent Technical Advisory Panel (TAP) asked for further clarifications on a number of points highlighted by the Accredited Entity (AE) in the funding proposal package. Following the written question and answer session, the independent TAP was engaged with the AE Team in an interview[1]. Upon the independent TAP query, the AE confirmed that they consider the issuance of agro-meteorological advisories under Outcome 1 (i.e, Component 1) would directly reduce exposure and/or sensitivity to climate change induced hazards and risks. The AE is confident that Outcome 1 will be the primary mechanism to reduce farmer's vulnerabilities to climate change. The funding proposal and the feasibility study report presented in the Annex-2 highlight the following activities under Output 1:

(a) Activity 1.1.1: Increase the spatial scale of agro-meteorological data collection and data processing capacity:

  (i) Mobilize Technical Working Group (TWG-AW);

  (ii) Upgrade existing hardware; and

  (iii) Conduct annual training programme.

(b) Activity 1.1.2: Develop Standard Operating Procedure (SOPs) for the production and dissemination of agro-climatological advisory services and data sharing:

  (i) Mobilize Technical Working Group (TWG-AW);

  (ii) Establish central data base; and

  (iii) Conduct annual training; and

(c) Activity 1.1.3: Increase awareness regarding agro-meteorological advisory services and regarding benefit in farm management and value chain activities:

  (i) Prepare and roll out of training of trainers (TOT); and

  (ii) Support peer to peer knowledge sharing and training.

17. The independent TAP does not find merit of the activities listed above, singly or collectively, to effectively reduce either exposure or sensitivity to climate change induced hazards and risks that are relevant to the target region of Cambodia. If these activities are regarded by the proponents as the "key responses" to directly reduce climate change induced vulnerabilities and risks, the impacts of the project will be negligibly low.

[1] As a regular independent TAP process in the assessment of funding proposals, a teleconference was organized involving members representing FAO and independent TAP on 8th September 2022. The meeting was also attended by task team working at the GCF Secretariat on the funding proposal, led by Mr. German Velasquez, the Director of DMA. The proceedings of the interview is recorded for future reference.

18. The independent TAP went on the enquire whether issuance of agro-climatological advisories could be effectively delivered from a virtual scratch, given the state of climate modelling and capacities within the country. The AE was reminded about the logical steps towards delivering such advisories: (a) developing a culture of climate modelling, including model parameterization and fine tuning; (b) generation of computer-aided forecasts, perhaps by using meso-scale models; (c) "ground trothing" of model forecasts to examine efficacy of the forecasts (segregated by hazard type and seasonality); (d) formulation of advisories and messaging; (e) examining adequacy of messages, validation of effectiveness and local contextual application; (f) developing regulatory aspects including institutional protocols for advisory dissemination (in order to avoid redundancy and establishing authority so that farmers consider such advisories seriously), and finally, (g) the last mile dissemination. The AE was asked whether the six years of implementation of the project would be adequate to perform all the above steps in order to deliver the most important modality to reduce farmers' vulnerabilities. The AE expressed that given their association with other projects, it would be possible for them to deliver outcome 1, as envisaged. The independent TAP is of the opinion that, even if the activities under Output 1 were critically important to deliver direct vulnerability reduction services, the technical difficulties appeared too steep to overcome and the realization of the positive impacts would not be possible within the stipulated time-frame.

19. The project identifies 135,000 smallholder farmers and other local value chain actors are the direct beneficiaries. The direct beneficiaries also include 450,000 farmers who would receive agro-meteorological advisory services under Outcome 1 as above. The total direct beneficiaries constitute about 3 per cent of the total population in Cambodia. Since the project is primarily a capacity-building focused project, it's indirect beneficiaries are expected to reach over 1 million people, which is about 6 per cent of the population of Cambodia. It is expected that 50 per cent of the beneficiaries will be women.

20. In the target regions, it is reported that 85 per cent of the farmers are involved in rice production. The cultivars under BAU-rice farming are suited to the current climate. Only recently, some farmers have switched to organic aromatic rice farming, again their agronomic requirements are by and large met by current climate. In the larger agricultural scene, cashew, mango and vegetables are still minor crops along with cassava, maize and beans. As such, the extent of vulnerability to these crops to current extent of climate change is still low. Therefore, direct vulnerability reduction at smallholders' level might only be facilitated if farmers access financial opportunity under Outcome 2 (activity 2.2.1) and employ either irrigation or create access to cool chain in a bid to ensure/safeguard their production/produce. The provisioning of agro-climatological advisories (Outcome 1), awareness raising (throughout the project), and watershed related institutional, capacity-building for planning (activity 2.4) and strengthening of regulatory and institutional framework (Outcome 3) will have indirect benefits, cumulative over time. Much of these benefits will depend on selection of right information package, appropriate dissemination mechanisms and effectiveness of participatory governance, especially in the planned watershed management.

21. The project is expected to roll out in six years with a total budget of USD 42, 850, 231 where GCF is expected to contribute USD 36,231,981 only.

22. Although the project is targeting smallholders in an LDC, due to weak linkage with climate change, the desired results might not be achievable in view of climate change-related hazards and risks. The independent TAP is of opinion that the impact potential of the project is low.

1.2 Paradigm shift potential *Scale: Low to medium*

23. The project is expected to intervene in areas where there is adoption of aromatic premium rice, vegetables, high value mangoes and cashew. The climate advisories, awareness raising messages, manuals for imparting training of extension workers involving NGOs and public service providers – all these "soft response tools" can readily be replicated elsewhere, even without the additional financing of GCF. The right institutions are already past of the project, who are supposed to carry such replicable packages. Other than replication of such soft tools towards building adaptive capacities, the project clearly refrains from any expansion of areas under these premium products. A hasty and direct scaling up elsewhere, disregarding environmental nuances which may be extremely sensitive to location-specific realities, could be quite risky. Moreover, if a larger group of smallholder farmers are persuaded to grow the same products with a false impression about readily available markets, some smallholders might face steep competition, as supply will tend to interplay with market price. Therefore, scaling up needs to be designed, if at all, with utmost care.

24. There is a theory of change. However, as explained earlier, the focus of the project is deliberately placed on capacity-building of smallholders, if not for safeguarding their production, for fetching higher market price. The underlying assumption must then be: smallholder's possess very little know-how. The proponents have given high priority on Outcome 1 of the project where efforts will be made to deliver agro-meteorological advisories as a mechanism to empower farmers with knowledge regarding an impinging climate-change induced hazard and they would somehow manage the hazard. There is no arrangement provided by the project so that farmers can make the best use of advisories and safeguard their production. The theory of change does not give an impression that the farmers and their preferred products will be climate safe, following the issuance of an advisory. The independent TAP is of opinion that, if the production process remains as vulnerable, no matter how the post-harvest tools and marketing channels are organized, the farmers will lose out.

25. Responding to advisories is effective when the lead time[2] is sufficient to tweak agronomic practices, and/or the varietal change can be done, which is subject to availability of alternate variety that are simultaneously profitable. Farm-level hydrological realities can be changed upon issuance of advisories, only if catchment-scale governance on watershed management is ensured by appropriate regulatory interventions on water allocation and water rights. Hazards such as floods in the Mekong river and its associated hazards on cropping cannot be ameliorated by actions considered at farm-levels upon issuance of agro-climatological advisories. There is no concrete intervention proposed under the project that might go beyond awareness and capacity-building in terms of knowledge and allow smallholder producers to address a hazardous situation on their own. Without having any indication how these challenges will be met, it is farfetched to think that, without having a pool of alternative varieties which might be equally acceptable as premium products, sharing advisories will be equally useful to reducing vulnerability of the farmers.

26. Since the major focus of the project is to build capacity of almost all the stakeholders, there is plenty of potential for knowledge and learning. The training for trainers, the training of extension workers involving non-governmental organizations (NGO), the information sharing involving central and regional level decision-makers – all will be useful in raising overall awareness levels. Majority of the financing for the project is going for conducting these events. Perhaps the most exciting prospect lies on the formation of farmers'/producers' groups (PG),

[2] The funding proposal has not presented an analysis regarding adequacy of lead time for the agro-meteorological advisories. The meso-scale models which are used globally for the purpose, can be precise if the lead time is less (say, three days in advance). In such cases, the recipients of advisories can do only little to safeguard their standing crops. The forecast accuracy diminishes drastically as the lead time is extended. The probability of occurrence of a hazardous climatological event is reduced significantly if the lead time is extended beyond a week in advance. There are risks associated with failure of occurrence of a predicted agro-meteorological event: the farmers might not even trust the "messaging" issued by the advisory service providers. The issues regarding lead time is critical in agro-meteorological advisories.

especially women producers and the establishment of farmers' field schools (FFS) at local level, the latter is designed to offer platform for peer to peer learning. However, majority of the knowledge base will be built for post-harvest and value chain management, which is expected to optimize profit from marketing, but their efficacy in climate change related activities is nominal.

27. There are elements of building capacities by engaging extension services. However, the focus is on marketing and value chain management, not on climate-safe agronomic practices. Moreover, extension service is deliberately driven by non-governmental actors. As the funding proposal highlights it, the majority of the capacity-building training opportunities will be organized for the NGO-led extension workers. This might be a bad investment given the uncertainties regarding long-term sustainability of such organizations.

28. The informal information gathered through the local farmer/producers' groups and more formal landscape-level agro-ecology monitoring systems (LAMS) are mechanisms that will contribute to the creation of knowledge, while local farmer associations and cooperatives will initiate collective learning processes, especially through the FFSs. Although six years of implementation lifetime of the project is not adequate to gather information and assimilate such information to turn into local knowledge in a bid to address climate change related shocks and risks. Yet, the project will be able to initiate the process for longer term benefits beyond the project lifetime.

29. All the three components of the project are designed towards contributing to enabling environment. The Component 1 will enable the agro-meteorological services to generate information well in advance[3] to make farmers aware of inclement weather, while the extension service providers representing public as well as NGOs will gather capacity to carry forward the messages to their clientele. It is expected that agrometeorological advisory services will be streamlined following the capacity-building efforts. The Component 2 will primarily be dedicated to build enabling environment of various farmers' groups and associations to run their value chains or optimize profit from such value chains. The entire Component 3 is dedicated for enhancing enabling environment by building regulatory and institutional frameworks. In this process, the efforts are expected to create greater market access for the premium agricultural products. However, as indicated earlier, the creation of such enabling environment will only tangentially be eliminating barriers to the deployment of direct adaptation solutions.

30. From a development point of view, the proposed project is most likely to initiate a paradigm shift: from a current paradigm of low profit and insignificant monetary gains from premium market to a new paradigm of global standard products having optimization of profit from greater participation in value chains of premium products. When climate change related complexities are added, there is little climate additionality which is plugged into the project with tangible solutions regarding direct reduction of vulnerability to climate change.

31. The funding proposal also proposes a few interventions in the area of finance via the introduction of the Farmer-led Agricultural Resilience Mechanism (FARM), model revolving trust fund with financing institutions (FI), prototype index-based insurance products for these crops in partnership with a private insurer(s) under the National Crop Insurance Program, climate risk insurance, innovative financial mechanism and low-interest loan program, and the setting aside of "2% of their overall lending portfolios for issuing loans to smallholder farmers and other local value chain actors, particularly women farmers and value chain actors, based on the scorecard system on a pilot basis". Even for accessing finance from FARM, investments for

[3] The funding proposal has not present an analysis regarding adequacy of lead time for the agro-meteorological advisories. The meso-scale models which are globally used for the purpose, can be precise if the lead time is less (say, three days in advance). The forecast accuracy diminishes drastically as the lead time is extended. The probability of occurrence of a hazardous climatological event is reduced significantly if the lead time is extended beyond a week in advance. There are risks associated with failure of occurrence of a predicted agro-meteorological event: the farmers might not even trust the "messaging" provided by the advisory service providers.

acquisition of equipment to either reduce exposure to climate change or to reduce sensitivity to climate change related hazards and risks are not made a mandatory criterion. When farmers will be preached to practice climate resilient agriculture, or given an advisory, there is no guarantee that the same high value crop can still be produced safely. In such cases, the newly acquired information and know-how on post-harvest practices and value chain management might no longer be useful if the said hazard adversely affects the production. A balance between creating adaptation options at different levels and the current soft approach to build adaptive capacity could perhaps contribute more to bring a paradigm shift.

32. The independent TAP rates paradigm shift potential of the project as medium to low.

1.3 Sustainable development potential *Scale: Medium*

33. The project has elements which will contribute to sustainable development, especially those aspects of sustainable development where capacity-building needs are strongly felt. The following direct linkages to contribute to various Sustainable Development Goals (SDG) are worth highlighting:

(a) SDG 1 (End poverty by increasing household income) by improving income primarily by participating in capacity-building for post-harvest practices and value chain management involving high value premium crops. Since some of the target areas (such as Oddar Meanchey where rate of poverty is higher than national average) are among poverty hot spots, increase in income at household level will contribute towards eradication of poverty. However, one must not forget that, moving away from subsistence agriculture and embracing high value premium agricultural products without addressing adequately climate change related hazards can invite potential risks of occasional crop loss. The proposal falls short of analysis to provide a clear understanding whether the proposed crop insurance, as a risk pooling product, will be effective or not against such crop losses;

(b) SDG 5 (Achieve gender equality and empower all women) by empowering women farmers (involving 50 per cent of the target beneficiaries) with numerous capacity-building efforts to participate in gender-focused production of premium crops and in value chain activities of such premium products; and

(c) SDG 13 (Take enhanced management action to combat climate change) by providing agro-meteorological advisories, by raising awareness on climate resilient agriculture (CRA) practices, by creating institutional arrangements to offer a platform towards developing plans for integrated watershed management, and by creating financial support package so that part of the finance may be utilized for addressing management of drought and/or creating access to cool chains to protect high value products from rotting due to high temperature. However, the project does not attach any mandatory criteria involving investments in averting climate risks of agricultural production, which may or may not lead to an action combating climate change.

34. In addition to the above-mentioned direct linkages to SDGs, there can be other indirect modalities of contributing to SDGs. For example, contribution to SDG 6 (ensure availability and sustainable management of water) may occur by promoting a platform such as Landscape-level Agro-ecology Monitoring System (LAMS) with an interactive web-based data depository (activity 3.2), which is expected to contribute to achieve integrated water management in the downstream. Activity 2.4.1.1 aims at establishing an inter-district integrated water management framework, which will also help sustainable management of water under SDG 6. Having a framework through institutional capacity-building will indeed help, however, implementation of the framework is not guaranteed and no subsequent financing is earmarked in the budgetary allocation of the project, which is a limiting factor in this pursuit. Contribution to achieving SDG

15 (protect, restore and promote sustainable use of terrestrial ecosystems and sustainably managed forests) is also possible by considering restoration and protection of forest catchments in upper watersheds (Activity 2.4).

35. ***Social co-benefits***: Participation of farmers, especially women farmers and traders, in numerous capacity-building activities will contribute to the cohesion of the social fabric. Particular reference may be made to the formation of farmer groups and activities under the farmer cooperatives and associations. Participation possibilities of marginal stakeholders such as women producers in value chain delivery under the proposed FARM is likely to boost up social standing of these marginal groups.

36. ***Economic co-benefits***: The project is all about optimizing economic benefits from strengthening value chains involving premium agricultural products. If climate change do not create major production barrier by aggravating climate change induced hazards and risks in near term, a no-hazard scenario means much increased cash flow into the farms. It also means that the Government will get greater share of export values and revenues in terms of foreign exchange – a much coveted objective for a Government leading an LDC. Since the project documents have indicated that climate change has started to affect production cycle adversely, and the projection results indicate increased variability and change in climate systems, a no-hazard scene does not appear to be plausible. Therefore, the economic co-benefits to be realized necessitates strong adaptation actions that may reduce exposure and sensitivity to climate change induced hazards and risks. Heavy reliance on issuance of agro-meteorological advisories cannot ensure that high economic returns from premium products will continue to give high dividend unless risk averting tangible adaptation results are obtained against hazards that affect local agriculture.

37. The opportunities to access FARM resources for the "graduation" from poverty has an underlying assumption that, upon receipt of soft measures such as awareness and capacity-building, coupled with agro-meteorological advisories, farmers will be able to operate under the institutional platforms such as LAMS and they will be able to implement CRAs on their own initiative. However, such assumptions have not plugged in presence and access to other hazard management opportunities in the localities. There are climate driven phenomena such as floods, that are triggered by heavy downpour in the upper catchment of the Mekong River and such floods can wreck havoc in the agricultural scene in the northern Tonle Sap basin, unless flood are contained at scale along the basin. Such issues are much beyond control of the project, however the rosy picture around economic gains might be severely undermined under such circumstances. An analysis involving the bigger picture needs to be carried out before accounting for economic co-benefits of the project.

38. ***Environmental co-benefits***: In a project focusing on capacity-building, direct contribution to environmental co-benefit is difficult to come by. Following awareness and capacity-building activities, the recipients of the knowledge and know-how may or may not take necessary measures, especially when economic gain is the driving factor. Despite such uncertainties, the project has a few elements which are likely to contribute to environmental co-benefits. The primary contributor will be organic farming practices, which gradually decrease reliance on chemical inputs, rather apply integrated pest management and bio-fertilizers so that international best practices and standards are followed as closely as possible. By definition, such practices are generally less harmful to environment, if not completely benign to facilitate environmental harmony.

39. Improved agro-ecological condition and connectivity is the ultimate target of activity 2.4, which emphasize forest catchment conservation and restoration. The project will create a platform and build capacity to achieve this, although the project does not plan for associated activities beyond facilitating the platform for catchment and watershed restoration. Since there is no follow up activity being designed, the project has refrained from estimating emission gains

from forest conservation and subsequent sequestration. The gender-responsive LAMS is supposed to be another platform which is being promoted by the project, which is expected to provide for a data base that will eventually help the management of landscape level agro-ecology in the target areas. As such these are farfetched activities that are limited to the creation of platforms and promotion of their use through capacity-building.

40. The value chain activities will help marketing of premium products even beyond the boundary of the country. In the BAU agricultural scene, the carbon footprint of products in subsistence agriculture was limited, only proportional to national average values. However, with added emphasis towards organic premium products, in one hand there will be reduction in carbon based chemical inputs and on the other, the carbon footprint for export of the premium products is likely to escalate significantly. Even if contribution to bunker oil is taken out of the consideration, the average product carbon footprint might escalate significantly, for which GCF might find the project about to tarnish its green image in global level.

41. ***Gender equality and co-benefits***: Inclusion of women producers in the value chains is likely to be the greatest strength of the project. Women are expected to play central roles in the project. They will receive, along with other male producers and traders, awareness and training on various aspects including CRA, responding to agro-meteorological advisories, receive information from LAMS, accessing finance using FARM opportunity to consider measures to strengthen value chain efforts, post-harvest techniques, standard practices towards organic farming, including global identification of premium products, etc. All these opportunities are available to women producers.

42. The project must be mindful regarding the fact that, women producers as potential key stakeholders in the project are also socially active individuals. Since a lot of arrangements will have to be made for building capacities of various kinds involving them, the timing for arranging local level training and awareness building sessions needs to be designed with utmost care so that their family and personal lives are not disturbed because of heavy project-related engagements. Prior consent is needed before finalizing any local level engagement by the women.

43. The number of beneficiaries including female beneficiaries is significant. The target area is quite large in size. Such information suggest that the project should have significant sustainable development potential. However, as explained in the preceeding paragraphs, there are risks that may negate the contribution to sustainable development. In view of the opportunities and risks, the independent TAP finds the sustainable developmentn potential of the project as medium.

1.4 Needs of the recipient *Scale: Medium to high*

44. Cambodia is an LDC. The majority of its population is dependent on agriculture for their livelihoods. However, people's dependence on rain fed agriculture is continuing, which is why their production system remains vulnerable to environmental factors. With a population of 16.72 million (2020), Cambodia's per capita Gross Domestic Product is US$4,421. The country is lagging behind in many social indicators, as reflected in the human development index of 0.59, which places Cambodia in 144th place out of 189 countries. In terms of climate readiness indicator, the ND-Gain index score is 38.7 and a ranking of 149 out of 181 countries. The country is ranked 84th in the climate risk index (German Watch, 2021).

45. The NTSB is comprised of provinces, a few of which have higher poverty rates than the rest of the country. The region is home for 20 per cent of the country's population and one third of the agricultural outputs comes from the basin. Yet, a significant proportion of the population is poor, owing to inadequate income from agriculture-based livelihoods. In the backdrop, there has always been the flood susceptibility of the basin, owing to direct influence zone of the

mighty Mekong River. If it rains heavily in the upper catchment, much of it is outside the borders of Cambodia, the river overtops the valleys and floodplains. As rice is the mainstay of crop agriculture, heavy floods generally take toll on standing rice crops. In recent times, however, the number of days with ambient temperature beyond a certain threshold has been increasing, along with heat stress and resultant increase in evapo-transpiration, all of these changes are due to climate change and have significant implications in terms of crop production.

46. The country and its NTSB needs international support to address climate change related vulnerabilities and to find ways for the farmers including female farmers to increase farm profitability and household income. The weak business model involving premium agricultural products are of great concerns. Aromatic rice produced in organic conditions finds its market, however the standardization processes and post-harvest management must be in place for accessing greater international market and fair prices. The post-harvest management and subsequent processing of cashew needs a thorough overhauling in order to get better price than its current bulk farm gate price. The current marketing processes for leafy vegetables and mangoes are not conducive enough to fetch premium price, unless proper interventions are designed and executed in terms cool chain and value chain management. All these need a careful planning, which is difficult for Cambodia to plan and finance without the international support.

47. Investment in value chain is often committed by private sector, especially if the products are suitable to penetrate international market to fetch home foreign currency. In general, host Governments create enabling policy environment so that the private sector can make profit, while protecting the rights of the producers. In case of Cambodia, a significant part of the value chain has been controlled by unorganized sector from neighbouring countries, who rely on informal handling taking advantage of poor governance and surveillance and lack of capacity to impose regulatory aspects related to standards applied for organic products for export markets. In such haphazard business condition, the local private sector is perhaps reluctant to invest. Assuming that the products will be made available by defying adverse climate conditions, the Government must access and mobilize funds to streamline the value chains. To proceed with the daunting task in the absence of private sector investment, the Government must find international source to mobilize finance.

48. The mandate of GCF is to mobilize finance where climate change additionality is explained and understood. Ideally, investments going into strengthen the production in the face of climate change related adversities are welcomed by GCF. In those cases, the needs of the recipients are given high priorities.

49. The value chain related institutional mechanisms are proposed to be strengthened by the project. The process of development of agro-meteorological advisories is likely to strengthen capacity of allied national institutions. However, the exit strategy has little practical relevance towards restoring newly built capacities, especially modelling-related capacities, beyond the implementation of the project. Absorbing project staff modellers in regular human resource deployment structures does not generally guarantee retention of modelling capacities, the latter being highly sought after expertise in global stage. A more innovative approach could be considered to ensure sustainability of the system well beyond the implementation timeline of the project. On similar notes, the replacement of computational equipment, the recurrent retention costs for softwares (unless open access codes are being used), O&M costs for equipment to be procured under FARM support – a succinct plan is needed to ensure that there will be continued financial mobilization once the project's finance is exhausted. The institutional implementation capacity is also dependent on such arrangements, in addition to build human capacities through training etc.

50. The needs of the recipients appear high to medium.

1.5 Country ownership *Scale: High*

51. The Royal Government of Cambodia is keen on implementing a project such as PEARL. In 2013, Cambodia launched its climate change strategic plan 2014-2023. The concerns and priorities involving climate change is embedded in the national strategic development plan of Cambodia (NSDP, 2014-2018). Sectoral ministries of the country are asked to develop their mandate-specific climate change action plans (2014-2018) in the light of NSDP. The project is aligned with the sectoral climate change action plan for agriculture. Moreover, the project finds its linkages with national documents in relation to climate change, which includes the following: nationally determined contribution, national adaptation plan of action, national adaptation plan process, etc. The project is also considered as a priority project under Cambodia's GCF Country Programme. While the objectives concerning safeguarding agriculture in NTSB through adaptation is well articulated, the primary focus of the project involving marketing and value chain with minimal support for adaptation makes the understanding rather confusing. The climate relevance of the project is extremely diluted due to overemphasizing on making greater financial profit by penetrating premium market.

52. FAO is a specialized body under the charter of United Nations, designated for its role in promoting agricultural productivity and addressing food security. FAO is committed to meeting the 2030 agenda for achieving sustainable development and in the process, it focuses on sustainable agri-food systems for better production, nutrition, environment, and life, leaving no one behind. The country office of FAO in Cambodia has been in operation since 1979. It has extensive experience in working in NTSB. It works in close cooperation with the line ministries including the ministry of agriculture, forestry and fisheries (MAFF) as well as ministry of environment (MoE). FAO is both the AE and the Executing Entity (EE) for the project, while the Royal Government of Cambodia is the other EE, working through the MAFF and the MoE as the two co-Executing Entities (Co-EEs).

53. The MAFF has the capacity to drive the agricultural agenda within the project. Although the value chains for different products are being managed primarily by the private sector, the MAFF has the role of formulating polices and creating enabling conditions to strengthen value chain activities. There are two distinct features found in the analysis of capabilities of the particular Co-EE: (1) its role in boosting agricultural production, including its extension services geared towards production, is praiseworthy; and (2) despite having policy frameworks for value chain, the regulatory functions of the wing of the ministry has loopholes, which is why the optimum financial gains from sustainable marketing of exportable products could not be achieved. However, the majority of the activities of PEARL project are targeted to address the weaknesses regarding value chains for premium products.

54. The MoE is a fairly new ministry compared to other ministries with specific legal mandate. It has a technical wing titled Department of Climate Change (DCC), fairly young one, dedicated for addressing climate change. The MoE through the DCC has never assumed responsibilities to deliver one of the key responsibilities under the project: the development and delivery of agro-meteorological advisories. In this regard, the EE can only offer support to FAO in realizing its responsibility regarding the advisories. The country has necessary knowledge base towards collection and maintaining meteorological data and perform simple forecasting roles such as weather forecasting. However, it does not have a proven capacity to provide technical support to MoE on model driven forecasting with adequate lead time. In any case, FAO has to help develop national capacities to deliver the Outcome 1.

55. MoE has dual role in the project. As a national designated authority (NDA), the ministry collaborates with GCF and has forwarded the project under the GCF Country Programme. The NDA has been involved in designing the project. The proponents claim that a consultative process has been initiated towards completing the design of the project, where stakeholders from different sectors including private sector, farmers; associations and farmers' federations, NGOs and civil society organizations have been part of the discussions. The consultative processes have integrated views from regional and sub-national bodies and agencies. It is

claimed that the strong focus of having almost 50 per cent women as beneficiaries is primarily due to involvement of gender-focused civil society organizations.

56. The NDA is familiar with another GCF financed project namely CAVS, which is led by Asian Development Bank. It is suggested that the NDA will ensure a close collaboration between the two GCF financed projects if PEARL is endorsed. Since MoE is the focal point for projects under multilateral financing windows such as the Global Environment Facility (GEF), the organization will assume responsibilities to bring harmony among other projects and to make sure that duplication of efforts is avoided.

57. In view of the above analysis, the independent TAP finds the country ownership as high.

1.6 Efficiency and effectiveness *Scale: Low to medium*

58. The project is proposed to be implemented in six years with a total budget of USD 42,850,231.00, of which USD 36,231,981.00 is requested from GCF as grant. Considering the Cambodia is an LDC, the request for grant support is justified. The budget is comprised of a co-financing amount of USD 6,618,250.00 with a co-financing ratio with respect to GCF support is 0.182.

59. The independent TAP finds the major focus of the project is on building capacities of various kinds. With an exception of building capacities in value chain of premium products, private sector is not generally interested in financing a project such as this. Since the Royal Government of Cambodia is required to finance in aspects related to poverty reduction and socio-economic development of the country, there is a deficit in national finance for a project such as this, which is why GCF financing is requested with full concessionality. Given the GCF financing policies, such grant financing is justified.

60. An economic and financial analysis (EFA) is attached with the funding proposal. It is assumed that 60 per cent of the target beneficiaries will be able to adopt climate resilient and high value practices and technologies following the capacity-building interventions and direct support and economic benefit of such beneficiaries are limited at farm gate level. The analysis considered a discount rate of 5 per cent. The net present value following the project lifetime (20 years) is estimated at USD 84 million. This indicates that the project is viable in financial terms. The financial internal rate of return of the project is estimated at 38.7 per cent, while the overall economic rate of return is estimated at 45.8 per cent.

61. The robustness in the financing is tested in the EFA. If the adoption rate involving the beneficiaries is dropped below 31 per cent, only then the positive net present value starts to diminish. The financial internal rate of returns estimated against assumptions of 20 per cent increase in implementation costs and separately, 20 per cent reduction in benefits give strong signal that the project's financing is robust.

62. The independent TAP recognizes the ambition on the proposed financing program under FARM (as in paragraph 31 above), even without a mandatory criterion for addressing exposure and sensitivity to climate change induced hazards and risks. However, the proposal lacks the in-depth assessment of agri-finance market from both the formal and informal sources, form the insurers (indemnity type), and other private and public sector actors. The proposal has not presented an informative baseline on issues regarding sustainable finance and potential challenges from both the supply and the demand sides. Questions on finance availability, accessibility, affordability, and acceptability remain unanswered. Proposing a solution in the form of crop insurance without a proper understanding on the market makes the proposal weak. Without these, the effectiveness of this intervention involving FARM in the agri-finance space remains to be seen, as the poor financial market assessment may not correctly address the sustainable finance issues, challenges, barriers, and opportunities that will contribute to the

(i) positive adaptation impact on the proposed interventions under Outcome 2, (ii) the paradigm shift, because without finance it is not sustainable, (iii) the needs of the recipients. The FARM model, for example, is not clear if this is addressing or creating another unintended consequence in the finance sector – potential crowding out FIs, or financially excluding the most vulnerable farmers.

63. One of the potential shortcomings of the project is having no significant provision to create greater access to value chain infrastructure, where the financial requirement might not be covered with the maximum allowable provision of FARM. Since value chain infrastructure in Cambodia is in its rudimentary stage for achieving international competitiveness for premium products, unless larger scale value chain facilities are in place, value chain efforts considered at small-scale producers' group level are likely to face difficulties. The target of FARM financing window caters the financing needs at the producers' end, not addressing the potential needs of the larger scales. The absence of financing to create greater access to value chain infrastructure at all levels might reduce the effectiveness of value chain development efforts.

64. The key question is, can this project catalyse private sector financing following the project's inputs at the lowest tier? Given the fundamental weaknesses in governance in relation to product marketing outside farm gates coupled with lack of financing in in-country development of value chain infrastructure, the existing value chains operating at a much lower cost than usual would continue to provide disincentives to private sector for bringing in new investments in proper value chain development. Farmer's know-how on agro-meteorological advisories (Outcome 1), post-harvest techniques and value chain (Outcome 3) and the limited focus on institutional development through capacity-building and developing platforms (outcome 3) are likely to lose out if the actors outside agriculture marketing remain weak. These institutions need to be strengthened so that their roles in governance are integrated with all the tiers of value chain development involving the premium products. The proposal does not provide any answer regarding unauthorized cross border trade, involvements of middle-men, lack of cool chain investments, and so on.

65. The differences in packages being offered to farmers under Outcome 1 (mainly agro-meteorological services and other advisory services[4]) and farmers under Outcome 2 (e.g., premium market access, access to technologies and finance via FARM) leads to a risk of wider income disparities between the least and most vulnerable farmers. The AE, in its financial and economic analysis did not clearly highlight the NPV differences from the two farmer groups.

66. As indicated earlier, the project in one hand would tend to reduce environmental externalities by promoting organic farming, especially involving rice and cashew. However, the project's inherent objective is to exploit full potential of international value chains, part of which cannot be achieved without increasing carbon footprints of such premium products. Export of niche products generally brings home additional income, however it must pay an environmental cost. A potential increase in carbon footprint for the niche products might not be a desirable outcome at GCF.

67. Building capacities for the agro-meteorological advisories is a highly technical issue and cannot be approached without following international best practices. The project starts with upgradation of its computational arrangements. However, this must be matched with enhancement of national capacities for modelling which include both modellers (i.e., trained human resources) and computational softwares and algorithms (which needs to be updated on a regular basis). The associated descriptions do not indicate a full proof plan regarding

[4] During the interview, the independent TAP further clarified this issue. AE responses[4] , as paraphrased, are as follows, advisory services provided to the other farmers include agro-met, clearing house, landscape agro-ecological management systems, pest and disease management, specific crops management. Other mechanisms embedded in the project include the communication of benefits of improved practices, risk management advise during growing season, and general improvement in agricultural extension capacities. These will add value to the other farmer groups.

continued supply of human resources for modelling, retention of modellers in the pool (the mechanisms), and supply of very high O&M for the computational arrangements.

68. All the other capacity-building efforts are planned where the engagement processes considered generally follow industrial best practices. One must be mindful of engaging such a large number of women in capacity-building and awareness raising exercises: the sessions need to be designed properly so that women are free to join and actively participate without affecting their household chores – the latter can have adverse impacts on women's lives. Again, these sessions need to be planned following best practices.

69. The project limits its approach within building capacities, not to address many other allied issues that are discussed in this assessment. There might be an assumption that other projects will take care of certain needs in due course, under autonomous development. A few projects are indeed being implemented in Cambodia. For example, FAO has been involved a few small-scale projects under Least Developed Country Fund. There are other projects, part of which are being implemented in NTSB. Assuming that the proposed project finds synergies with these projects, the positive impacts will only be consolidated. However, one must not forget that the primary focus of the project is not to expand the activities in new areas for increased agricultural production, rather assisting in realizing increased value at farm gate levels by targeting at premium agricultural products. Since the linkages related to climate induced vulnerability reduction is limited through the approach and design, the effectiveness of building synergy involving other projects on the missing grounds does not appear significant.

70. In view of the above analysis, the independent TAP is of opinion that the overall efficiency and effectiveness is medium to low.

II. Overall remarks from the independent Technical Advisory Panel

71. The overall merit of the proposed project towards awarding GCF's scarce resources is low. The scores of (a) impact potential, (b) paradigm shift potential and (c) efficiency and effectiveness are not high enough. Yet, the independent TAP has no policy guideline to object such a project on the basis of its overall performance indicators. The independent TAP recommends the Board to endorsed the project with conditions.

72. The independent TAP has little hesitation to inform the Board that the project ideas deserved a better formulation. There are weaknesses that are explained in the assessment. In order to strengthen the project and to ameliorate risk of further reduction of effectiveness, corrective measures need to be in place on specific major weaknesses, as articulated in the following paragraphs:

(a) Paragraphs #7 through to #10 on lack of climate understanding and contextualization;

(b) Paragraphs #31 and #62 on lack of analyses on agro-financing and agro-insurance market baseline assessment, and

(c) Paragraphs #14, #16, #17, #31, #36, #62 and #65 on establishing explicit connections between Outcome 1 and Outcome 2, so that direct impacts through addressing exposure and sensitivity to climate change induced hazards and risks could be promoted and the mobilization of finance through FARM mechanism could be made increasingly responsive to climate change (rather than placing primary focus on value chains) as well as creating better response options for non-participating farmers; and

(d) Paragraph #62 on strengthening eligibility criteria for selecting farmers and farmer organizations.

73. In order to minimize the risks, the independent TAP further recommends that any approval of this funding proposal by the Board is made subject to the following conditions precedent to the second disbursement to the AE under the funded activity agreement ("FAA").

(a) Delivery to the Fund by the AE, in a form and substance satisfactory to the Fund, of a final version of a revised climate change study, clearly providing an evidence base for the climate rationale, including trend analyses, on (a) heat stress due to increasing number of days above indicative upper thresholds relevant for mango, cashew, rice and vegetables in the NTSB; (b) floods in the NTSB; (c) droughts using climate epochs in the NTSB; and (d) ambient temperature beyond thresholds indicating where cold chains need to be ensured for each of the major premium products (vegetables and mangos). Such analyses should take into consideration available observation data from official hydro-meteorological data depositories as well as projection data based on application of validated climate models;

(b) The delivery to the Fund by the AE, of an in-depth agro-financial and insurance market baseline assessment including consideration of potential challenges from both the supply and the demand sides,[5] in a form and substance satisfactory to the Fund; and

(c) The delivery to the Fund by the AE, in a form and substance satisfactory to the Fund, of a revised, single eligibility criteria applicable for beneficiaries under both Outcome 1 and Outcome 2 which ensures that the agricultural cooperatives, farmer associations, farmer organizations, producer groups, community protected areas, community forests and agricultural unions targeted under Outcome 2 are comprised of, and selected from, the eligible smallholder farmers targeted under Outcome 1 (as such beneficiaries are identified in the funding proposal), such that the same farmers and farmer group beneficiaries eligible under Outcome 1 are also the eligible and direct beneficiaries participating under Outcome 2. [6]

[5] Refer to comments under para 62 above.

[6] Refer to comments under para 65 above.

Response from the accredited entity to the independent Technical Advisory Panel's assessment (FP199)

Proposal name:	Public-Social-Private Partnerships for Ecologically-Sound Agriculture and Resilient Livelihood in Northern Tonle Sap Basin (PEARL)
Accredited entity:	Food and Agriculture Organization of the United Nations (FAO)
Country/(ies):	Cambodia
Project/programme size:	Small

Impact potential

The AE would like to highlight that the project aims to support 450,000 vulnerable farmers including poor farmers, women, and other minority groups, in the highly vulnerable Northern Tonle Sap Basin (NTSB) to adopt climate resilient, sustainable and high value agriculture to respond to observed and future climate risks and build adaptive capacity. This represents ~ **25%** of the target region's predominantly agricultural population and ~ **3%** of Cambodia's population. As also highlighted by the high ITAP assessment rating for Needs of Recipient, the AE confirms that the needs of the most vulnerable in Cambodia (a Least Developed Country) are adequately addressed.

As per Funding Proposal (Table 13), around 85 percent of farmers in the target project areas grow rice, predominantly rain fed, as their main livelihood activity, while around two and four percent respectively grow vegetables or perennial crops such as mango or cashew as their major livelihood activity. The project targets a transformation from prevailing climate vulnerable, low quality and low value agriculture to climate resilient, sustainable and high value agriculture.

The project design is informed by detailed analysis of observed climate trends and projections of the impact potential of climate change on the project's target production systems as discussed in the Funding Proposal as well as the Feasibility Study. This analysis used the best available data and modelling approaches. Due to the characteristics of each system, the range of observed and potential impacts varies, with trends such as increased heat stress, precipitation variability and increased dry periods that present significant risks to farmers across the target region.

The AE would like to highlight that the climate change analysis prepared to develop this project has already resulted in two, unique peer-reviewed publications – 1) Journal of Agronomy and Crop Science, 2022, Alvar-Beltran et al; and 2) Agricultural and Forest Meteorology, 2022, Alvar-Beltran et al.

Paradigm shift potential

The AE would like to highlight that the project targets a transformation from climate vulnerable, low quality and low value agriculture to climate resilient, sustainable and high value agriculture in Cambodia through improved climate/agro-met services, agriculture extension services and public-social, private partnerships (PSPP). These partnerships will draw in additional technical assistance and financial literacy for scaling up the project's proven cost-effective and strategic investments to increase the sector's overall climate resilience and sustainability.

Based on the AE's extensive experience with similar initiatives in Cambodia and in other countries, the proposal emphasizes six mechanisms of transformation that are considered to be highly scalable and replicable within the NTSB and beyond, namely:

1. Improved agrometeorological advisory services and their outreach capacity (Outcome 1);
2. Business and financial literacy development and climate-resilient and high-value business planning (Outcome 2);
3. An innovative climate adaptation asset acquisition mechanism (i.e., FARM) for the most vulnerable smallholder farmers and other local value chain actors with limited access to finance for adopting climate-resilient measures, which also promote high-value practices (Outcome 2);
4. Awareness-raising, knowledge management and demonstration of appropriate farming and value-addition techniques and technologies (Outcome 2);
5. Integrated watershed management for improved ecosystems resilience and agroecology (Outcome 2); and
6. An enabling environment for enhanced access to agricultural finance, PSPPs, and systematically leveraging private and public investment for climate-resilient agriculture (Outcome 3).

Sustainable development potential

In addition to its contribution to other SDGs, as outlined by the ITAP, the project also contributes directly to reducing hunger (SDG 2) by promoting resilient and sustainable, high value agriculture. The FP highlights that food security in the target region is at risk and that 20-60% of households in the NTSB will experience moderate to severe food shortages due to crop loss and damage on an annual basis.

Needs of the recipient

The AE agrees with the iTAP assessment that the NTSB is comprised of some provinces that have higher poverty rates than other regions of Cambodia. In addition, the climate change impact potential analysis presented in the Proposal, supports the iTAP's assessment that the number of days with ambient temperature beyond a certain threshold has been increasing, along with heat stress and resultant increase in evapo-transpiration. As the iTAP notes, these changes are attributed to climate change and have significant implications in terms of crop production in the project's target region highlighting the timeliness and potential importance of the proposed project for the target beneficiaries and Cambodia.

Country ownership

iTAP assessment as High is acknowledged. The AE confirms that the Ministry of Agriculture, Forestry and Fisheries (MAFF) and the Ministry of Environment (MoE) have the capacity to work with the AE as co-executing entities. Through project support, a tailored agrometeorological advisory system will be implemented under the joint leadership of MAFF and the Ministry of Water Resources and Meteorology (MoWRAM) as the home of the national meteorological service (NMS) in Cambodia. Furthermore, based on FAO experience in building institutional and technical capacity for agricultural climate services, the AE confirms that with project support a functional agrometeorological advisory system will be established in the target area within the project duration.

Efficiency and effectiveness

The project has an estimated aggregate Financial Internal Rate of Return (FIRR) of 38.7%, and an overall Economic Internal rate of Return (EIRR) of 45.8%. As noted in Annex 3, these estimates were based on the assumption that 60% of the target beneficiaries will successfully adopt a limited set of climate-resilient and high-value practices and technologies as a result of the project, and that these benefits do not go beyond the farm-gate. Furthermore, investment costs related to access to finance, technologies, and knowledge needed by the smallholders to adopt climate-resilient and higher-value practices to access additional benefits such as premium market segments were not included into the crop models used to calculate expected financial and economic returns at the household level. As a result, the AE would like to further highlight that these estimates of project benefits are conservative.

The AE considers that the feasibility of the spillover effects and the graduation model promoted by the project is high, based on the extensive consultations with farmers groups, civil society organizations and private insurance and finance providers as well as past experiences with similar tiered technical assistance and investment projects in Cambodia and globally.

Overall remarks from the independent Technical Advisory Panel:

The AE acknowledges the iTAP overall assessment and welcomes the recommendation for Board approval.

The AE confirms the following conditions can be addressed prior to second disbursement:

1. Further elaborate the project's climate change study, clearly providing an evidential base, including trend analyses, on:

   (a) heat stress due to increasing number of days above indicative upper thresholds relevant for mango, cashews, rice and vegetables in the NTSB;

   (b) floods in the NTSB;

   (c) droughts using climate epochs in the NTSB; and

   (d) ambient temperature beyond thresholds, indicating where cool chains need to be ensured for vegetables and mangos.

   The AE is committed to work with the GCF to expand the range of technical analysis available to support assessments of climate change impact potential.

2. An in-depth agro-financial and insurance market baseline assessment.

3. Confirm that beneficiaries of the project agricultural cooperatives, farmer associations, farmer organizations, producer groups, community protected areas, community forests and agricultural unions targeted under Outcome 2 are comprised of, and selected from, the eligible smallholder farmers targeted under Outcome 1 (as such beneficiaries are identified in the funding proposal), such that the same farmers and farmer group beneficiaries eligible under Outcome 1 are also the eligible and direct beneficiaries participating under Outcome 2.

Gender documentation for FP199

GENDER ASSESSMENT

Public-Social-Private Partnerships for Ecologically-Sound Agriculture and Resilient Livelihood in Northern Tonle Sap Basin (PEARL)

May 2022

Acronyms and Abbreviations

AC	:	Agricultural Cooperatives
ARDB	:	Agriculture and Rural Development Bank
CPA	:	Community Protected Area
CGCC	:	Committee for Gender and Climate Change
CCCSP	:	Cambodia Climate Change Strategic Plan
CBO	:	Community-Based Organization
CCWC	:	Commune Committee for Women and Children
FAO	:	Food and Agriculture Organization of the United Nations
FGD	:	Focus Group Discussion
GMAG	:	Gender Mainstreaming Action Group
GAP	:	Gender Action Plan
GCCSP	:	Gender and Climate Change Strategic Plan
MAFF	:	Ministry of Agriculture, Forestry and Fisheries
MoWRAM	:	Ministry of Water Resources and Meteorology
MoE	:	Ministry of Environment
MoC	:	Ministry of Commerce
MoWA	:	Ministry of Women's Affairs
NSDP	:	National Strategic Development Plan
NP-SNDD	:	National Program for Sub-National Democratic Development
NCDDS	:	National Committee for Sub-National Democratic Development Secretariat
NR-V	:	Neary Rattanak V
NGO	:	Non-Government Organization
PEARL	:	Public-Social-Private Partnerships for Ecologically-Sound Agriculture and Resilient Livelihood in Northern Tonle Sap Basin
PDAFF	:	Provincial Department of Agriculture, Forestry and Fisheries
PDoE	:	Provincial Department of Environment
PDoWA	:	Provincial Department of Women's Affairs

PDoWRAM	:	Provincial Department of Water Resources and Meteorology
PMUAC	:	Preah Vihear Meanchey Union of Agricultural Cooperative
UNFCCC	:	United Nations Framework Convention on Climate Change

Contents

I. Introduction

The rapid growth of the Cambodian economy over the past two decades has been accompanied by significant steps towards gender equality in the labor market. The agricultural sector in Cambodia continues to play an important role in supporting economic growth, ensuring equity, securing food security, and promoting the development of the rural economy. The average monthly income per household in Cambodia came from different income sources, of which 91.3% from the primary income from which 54.8% from wage and salary, 36.4% from self-employment income of which agriculture is included[1].

Tonle Sap zone has the largest share of agricultural land in 2020. A total of 1,527 thousand hectares in Tonle Sap zone, approximately 12.1% (185 thousand hectares) was owned by women headed households. About 48% of the total area of agricultural land in 2019/20 has irrigation facilities. In the wet season, about 27% of agricultural land was irrigated for growing crops and plants[2].

Cambodian women farmers play a crucial role in the translation of the products of the agriculture sector into food and nutritional security for their households. Women are also central in wholesale and retail marketing of agriculture products. They are involved as collectors, and/or local traders and are the principal retail sellers, working in markets at local, provincial, and national levels. Women are active partners in input supply agro-business, dealing directly with clients, providing information and knowledge on the use of inputs, fertilizers, and pesticides[3].

Risks of climate change, mechanization, and migration are affecting the agriculture sector in Cambodia significantly, especially with regard to women's labor and contribution to gender roles and relations. The threat of climate change has increased droughts, storms, and floods and has been recognized as a key development challenge. There is evidence that climate change disproportionally impacts women when compared to their male counterparts. This is due to a number of underlying elements of vulnerability including limited knowledge, and access to climate risk information and resources often driven by lower rates of literacy, access to education, access to decision making and information sources as well as lower levels of access to finance. Women are generally not the main recipients of extension services and have less access to information about effects of climate change and relevant technological resources. They also have limited access to financial services and the emerging financial mechanisms which may offer support for climate change adaption and mitigation activities. Mechanization and introduction of new technologies impact men and women farmers differently. Limited efforts are being made to train women in using various machinery and new technologies. In addition, gender norms result in different roles between men and women farmers using machinery and technologies.

In alignment with long-term vision of the Ministry of Agriculture, Forestry, and Fisheries (MAFF), and National Strategy to Promote Gender Equality and Women's empowerment (known as Neary Rattanak - NR-V), the Gender Mainstreaming Action Group (GMAG) of MAFF promotes gender equality and women's

[1] Ministry of Planning (2019/2020) National Institute of Statistic, Cambodia Socio-Economic Survey

[2] Ibid

[3] Ministry of Agriculture, Forestry and Fisheries (2016-2020) Gender Mainstreaming Policy and Strategic Framework in Agriculture

empowerment in the sector through its 5-years gender mainstreaming policy and strategic framework. This policy and strategic framework have been communicated and operated horizontally and vertically across the sector.

The proposed project "Public-Social-Private Partnerships for Ecologically-Sound Agriculture and Resilient Livelihood in Northern Tonle Sap Basin (PEARL)" aims to enhance the climate change resilience of smallholder farmers and local communities in the Northern Tonle Sap Basin (NTSB) by increasing their access to growing premium market segments while using their improved market access to incentivize their transition to climate-resilient practices, mainly through effective public-social-private partnerships. The project plans to support establishing a gender responsive, landscape-level agroecology monitoring system to crowd in public and private investment in climate-resilient, higher-value and sustainable agriculture. To address gender gaps collaboratively and effectively a gender assessment was considered as important to anticipate gaps and identify means to address those gaps. The current assessment is being undertaken to inform development of the gender action plan (GAP) which will be operated across project's stakeholders at different levels of the project.

II. Objectives of assessment

The gender assessment has specific objectives as listed below:

a) Identify gender gap, examine gender roles and needs in access to market opportunity, technology, climate risk information, skill, and financial services
b) Identify gender gap in access and control over productive resources and assets
c) Identify roles of stakeholders for operation of gender action plan

III. Methodology

The assessment was conducted through engagement of different stakeholders including relevant national, sub-national institutions, communities, and private sector actors in project-identified provinces. The question guides were prepared for the assessment and included as an annex 1 of this report. Different methods used for the assessment are outlined below:

1. **Desk review—**project's proposal and feasibility studies, national and sectorial polices and strategies were collected and reviewed. Relevant aspects from the existing studies, strategies and policies are being incorporated in the report of this gender assessment.
2. **Key informant interview—** in-depth interviews were undertaken with various national, sub-national institution, private sector actor and community representatives to assess their views related to gender gaps in agriculture sector and within specific scope of the proposed project. Total of 14 in-depth interviews with total of 30 participants (of whom 8 participants are women) were conducted with representatives of (1). MAFF; (2). Ministry of Environment (MoE); (3). Ministry of Water Resources and Meteorology (MoWRAM); (4), Ministry of Women's Affairs (MoWA); (5). Agriculture & Rural Development Bank (ARDB); (6). Food and Agriculture Organization (FAO); (7 & 8). Provincial Department of Agriculture, Forestry, and Fisheries (PDAFF) at Siem Reap and Kampong Thom; (9 &

10). Provincial Department of Environment (PDE) at Siem Reap and Kampong Thom; (11 & 12). Provincial Department of Women's Affairs (PDoWA) at Siem Reap and Kampong Thom; (13). Echo-farm at Siem Reap; and (14). Preah Vihear Meanchey Union of Agricultural Cooperative (PMUAC). To minimize risk of COVID-19 and travel time, the interviews were conducted virtually and face-to-face. The list of persons met is available in annex 3 of this report.

3. **Focus Group discussion**—A total of 4 Focus Group Discussions (FDGs) were organized at different communities in Siem Reap and Kampong Thom. FGDs were organized with the same arrangements at Siem Reap and Kampong Thom. At Siem Reap, 10 (5 women) committee members and members of Community Protected area (CPA) living on top of Kulen mountain (national park), at Svay Lue district, Siem Reap province were invited to participate in FGD. A total of 18 participants (11 women), of whom are the committee members and members of Agriculture Cooperative (AC) were invited to participate the FGD organized at Sot Nikum district, Siem Reap province. At Kampong Thom, 12 (4 women) committee members and members of CPA living in Prasat Sombo district were engaged in the FGD, and 19 (12 women) committee members and members of AC were also engaged for FGD at Santuk district. Engagement of these participants was combined between community leaders, smallholder farmers, value chain actors, and producers. The FGDs took between 60 to 90 minutes, organized at open spaces to avoid risk of COVID-19 transmission. The FGDs were moderated by national gender consultant expert and supported by an assistant. All participants were requested consent to discuss on the assessment's topics as well as recording.
4. **Limitation**: Due to time constrain, the FGDs and in-dept interviews were agreed to be conducted in Siem Reap and Kampong Thom, and one interview was organized virtually with farmer union at Preah Vihear. COVID-19 pandemic also caused some limitations for organizing the face-to-face meetings with key national representatives.

IV. Findings

1. Country context

Cambodia grew at an average rate of 7.6% from 1994-2015 and became a lower middle-income economy in 2015. The agriculture sector contributed about a quarter to annual GDP, it was the source of 36.4% (or 3.1 million jobs) of all jobs in 2016. About 46.3% (or 3 million people) of rural population still rely on agriculture for employment. Employment creation supplied by the agriculture sector grew at 2.8% driven by agricultural development boosted by rising agriculture commodity prices and cultivated land expansion[4]. The MAFF gender mainstreaming policy and strategic framework (2016-2020) still recognizes

[4] 2018 Job diagnostic study, the World Bank

that about 82% of the households live in rural areas. A large majority of these households engage in rice based agriculture, fisheries, collection of forest products, crops, and livestock production. Agriculture remains central to the livelihood of small farm holders and women. Marjority of Cambodian rural women work in agriculture on their own land or carry out unpaid agriculture work. There are 2.3 milion agriculture households in Cambodia, of which 80% are male headed and 20% are female headed.

Cambodian women farmers increasingly supply local markets with traditional and high-value produce, but compared to men, women still face a number of disadvantages including lower mobility, lower levels of literacy (75% compared to 85% for men – figures only available for 2015), less access to training, less access to market information, and less access to productive resources. Lower financial literacy of women than men and travel safety are identified as main gender gaps in Cambodia to access to markets for women. To market their products, women farmers need timely, reliable, and accessible market information. Financial services are also essential so that women smallholder farmers can pay for inputs, improve farming, and develop small business enterprises to empower themselves economically and support their family.

Migration has a strong influence on gender roles and division of labor in rural areas. It can have impacts in the level of participation which women have had in agriculture value chain and agro-business activities. The key contributing factor to this change is increased migration of young women and men to garment factories, construction work, service industry and others. Rural households are often made up of only the elderly and children with working age adults, predominantly men, migrating outside their community.

From an institutional and operational perspective, NR-V, has hightlighted challenges in agriculture sector. Gender disaggregated data and qualitative studies on the impacts of climate change to women and vulnerable groups have not been sufficiently undertaken to regularly inform the implementing roadmap. Although, the master plan and action plan are prepared, insufficient resources remain a main challenge for implementing and mainstreaming gender into resilience and adaptation to reduce risks of disaster and threat of climate change. Women's representation at decision making levels remains low compared to men, especially in rural areas with this more pronounced for women of ethnic minority[5]. As part of efforts to address this the NR-V suggests strengthening partnership and coordination mechanisms at all levels.

2. Policy landscape

Overall, there are development policies supporting and shaping how Cambodia is moving forward in addressing gender gaps and achieving the goal of gender equality. The Cambodian government has demonstrated initiatives and support for gender equality over the past two-decades. Equality between men and women is guaranteed in the 1993 Cambodian Constitution. This commitment is also reinforced by Cambodia's ratification of the Convention on Elimination of Discrimination against Women (CEDAW) in 1992. In term of Climate Change, The Royal Government of Cambodia has signed international conventions on women's rights at an internationally guaranteed standard with the commitment to address gender issues that links with environment and climate change. One of these commitments was the signing of United Nations Framework Convention on Climate Change (UNFCCC) in the year 1996, the Kyoto Protocol in the year 2003 and the Paris Convention in December 2015 (COP21).

Gender equality is one of the important cross-cutting themes of the government's socio-economic policy as reflected in the 2001 Land Management Law, Rectangular Strategy Phase IV (RS-Phase IV) indicating

[55] Ministry of Women's Affairs (2019-2023), Neary Rattanak V, five years strategic plan for strengthening gender mainstreaming and women's empowerment

for Growth, Employment, Equity, and Efficiency: Building the Foundation Toward Realizing the Cambodia Vision 2050. Under the commitment of RS-phase IV, the National Strategic Development Plan (NSDP) as well as the 10-year National Program for Sub-national Democratic Development (NP-SNDD) specify the need to further improve the status of women, who are recognized as the backbone of Cambodian society and economy.

The Neary Rattanak (NR) is a national strategic plan developed since 1999. Its implementation is led and coordinated by the Ministry of Women's Affairs (MoWA) which aims to promote gender equality and women's empowerment in all sectors. Currently, NR Phase V (2019-2023) is being implemented by all government and non-government institutions and private sector stakeholders to accelerate and strengthen gender equality and women's empowerment.

Women in agriculture is a key element in the NR-V, which placed under the strategic pillar of women's economic empowerment. The NR-V also has its specific indication to support women farmers address the impacts of climate change.

RGC has also developed the Cambodia Climate Change Strategic Plan (CCCSP) 2014-2023 that aims to reduce gender vulnerability and risks to climate change impacts. Ministry of Women Affairs (MoWA) is a participating ministry to the formation of the CCCSP which is being coordinated by the Ministry of Environment (MoE). The CCCSP 2014-2023 action plan has set one of its objectives to "Reduce sectoral, regional, and gender vulnerabilities and health risks related to climate change impacts". The CCCSP's M&E framework has further developed a gender-sensitive target/ indicator: "By 2020, 10% of the protected areas, conservation areas, agro-ecosystems and forest ecosystems including mangroves, that have been under a lot of pressures in recent years are in an advanced state of restoration and are providing enhanced services, particularly to women, elders and children in local communities and indigenous ethnic minority groups". The focus of this target/ indicator is on the supply of essential services, including services related to water, health, food security, climate change adaptation, resistance and resilience to land degradation or natural disasters and, in general, services related to livelihoods and the well-being of Cambodians. It emphasizes addressing specific needs of women, local communities, ethnic minorities, and other vulnerable groups.

CCCSP 2014-2023 includes strategies to incorporate women into decision-making on climate change adaptation and mitigation, and natural resources management; increase awareness and relevant capacities on gender and climate change within MoWA and its decentralized offices and other stakeholders; conduct research on gender and climate change; and deliver targeted interventions for women related to climate change adaptation and mitigation.

As a follow-up to CCCSP, a *Gender and Climate Change Strategic Plan (GCCSP) 2014–2023* and a second *Gender and Climate Change Action Plan (GCCAP) 2019–2023*, and *a master plan for gender and climate change (2018-2030)* were prepared and used as a roadmap for formulating the projects and programs by MoWA. GCCAP 2019–2023 keeps the same six priorities as the 1st GCCAP, including a) integrating gender into climate adaptation and mitigation plans, b) increasing women's decision-making power at all levels, c) improving data on gendered roles in climate change adaptation, d) designing gender indicators for a national monitoring and evaluation framework on climate change, and e) designing gender-responsive climate change adaptation and mitigation projects. By the end of 2019, a master plan for gender and climate change (2018-2030), were adopted to pilot projects which focused on gender analysis, capacity building for women and climate resilience and adaptation, safe water management and hygiene and

disaster risk reduction during flood and drought season. Kampong Thom province is one of the piloting project's areas along with three other provinces[6].

MoWA's Gender and Climate Change Committee (GCCC) has developed the capacity of relevant institution staff at national and sub-national level on gender mainstreaming in climate change. The national guidelines on gender mainstreaming in investment for adaptation to climate change in five inter-sectors have been prioritized[7].

Within national policy and strategic guidance, GMAG of MAFF developed and implemented its five-year (2016-2020) gender mainstreaming policy and strategic framework in agriculture with three strategic objectives included: (1). to promote women's economic empowerment through women's access to goods and services for agricultural development and markets; (2). to strengthen capacities, resources, and commitment within MAFF to ensure effective mainstreaming of gender perspectives into the agriculture sector; (3). to increase women's and men's equal representation and participation in agriculture sector. Currently, GMAG-MAFF is developing its updated gender mainstreaming policy and strategic framework (2022-2026).

3. Gender gaps and roles at community

3.1. Agricultural cooperatives committees and membership. Results from the gender assessment shows that women's representation as members in AC is higher than men, approximately 70% women members. Table 1 below shows number of AC, members, and female members in Cambodia and the 4 targeted provinces of PEARL project. Table 2 shows the AC's unions in Cambodia and the unions in four provinces. Data of women's representation as AC's committee members/leaders, however, is not available. Therefore, the FGD with AC conducted at Sot Nikum district, Siem Reap province reported that the AC has 376 members/households (326 women) 5 committee members and only 1 male member. The 4 female committee members are the AC leader, and accountants while the male member works to help transport inputs and products inside the community.

At Santuk district, Kampong Thom province, AC has total of 148 households/members (majority is female member but data is not available), 9 committee members of whom 2 of them are female members. This AC is led men and the two women work as accountant and assistant. Once asked the reasons why the AC is being led by women, the women committee members indicated that they have support and motivation from their family, especially their husband and community members. The law on AC 2013 states that women and men serving as elected representatives are accountable to the membership. Agricultural cooperatives members have equal voting rights. Some women who attended the FGDs indicated that they do not feel sufficiently confident and capable to be AC leader considering the lack of capacity and are busy with daily household works and cares while men are considered **more** appropriated to take the role due to their higher chance for mobility, and accessing to information, technology, and market. In addition, men seemed to be considered having better knowledge for making decision.

3.2. Agricultural cooperative business modality. Different business modalities the two assessed ACs are focusing on. AC at Sot Nikum district, Siem Reap province is focusing on chicken raising, input supplies,

[6] Battambong, Prey Veng, Kampot

[7] 1.Agriculture, 2. Rural Development, 3. Health, 4. Water Resources, 5. Public Works and Transport

and inter-lending. Among 376 members/households, 105 are raising chicken. The business production is only chicken. The AC has secured contracts with two buyer companies (the chicken grill and Kasica company). During the FGD, the committee members and members indicated their confidence in having good skill to raise small-scale chicken at individual household.

On average, each member household raise start 100 chicks and the members can buy chicks from their AC member living and producing inside the community. All members stated that they are confident and motivated to raise chicken as there is no market concern. The buyer companies always collect buying their chicken inside their villages every week with agreed price, 1kg. chicken costs 1,6000 riel (equal to $4). As mentioned in above, ACs have more female members as they stay home for household works and care and small-scale agriculture activities while more men migrate for labor wage. Indicated during the FGD, female members indicated that raising chicken can help them to make additional incomes, and at the same time, they can also spend time for household works and other agriculture activities such as rice and home-garden.

Indicated in the discussion, most of members have land for producing rice but their main constraint is the lack of water sources and irrigation support, which means farmers can only produce rice once a year and rely on rainfall. The committee and members stated that they want to extend their business to rice as they can see the potential of market and land availability among farmers. They considered the technical support and training needed for higher product-price will be given by various stakeholders including government and non-government institutions. They also tried to calculate input and production costs with support of water sources testing and found that rice production is another potential agri-business for their community. Once asked about challenges the AC and its members may face, if engaged to this sector, most of them indicated that they can be technically confident as they found technical supports, if water sources made available. The female members indicated that they might need to work on rice production with men in term of access to technologies and machineries.

This AC shows very strong management structure and operation. Therefore, the AC committee wishes to support their members to access to financial services for extension of their productivity and improving income. The AC is trying to extend their production capacity to better supply the buyer companies. The committee also wishes to increase more members to increase their production capacity to larger scale.

AC at Santuk district, Kampong Thom province focuses on a single modality which is cashew. All FGD's participants stated that all lands for cashews have no land's title or ownership certificate while their lands for rice are legal[8]. All farmers feel unsecured for cashew lands, but they can only continue using it. As stated above, this AC is being led by male leaders while female members are working to support the AC. The AC has its own land and cashew nuts warehouses, of which the AC spent their own budget for buying the land and building two small warehouses, and one bigger newly built warehouse was funded by the government and people of Japan in July 2021. The biggest challenge this AC faces is the lack of capital to start-up their business operation, to collecting/buying cashew nuts from each member/household and sell to the contracted buyers/companies. Without its financial capacity, all

[8] Lands for rice and cashew are at different sites of national road. Farmers indicated that cashew lands are more costly than lands for rice.

warehouses haven't been used yet and the farmers still sell their cashew nuts to middlemen and local traders with unstable low prices. Once asked about cost calculation in production of cashew nuts, the AC committee and members seemed to be unclear. However, some of members indicated that an average of one hectare land per year with cashew production, farmer can earn approximately $300-$500, after labor costs.

3.3. Community protected area. A total of 31 Community Protected Areas (CPA) are identified in Cambodia, which are divided by areas/zones. All these protected areas have total of 309,463 hectares. The 31 CPAs have total of 182 communities, with 55,446 members/households and 1,802 committees, of which 339 are female committee members (equal to 19%)[9]. Once asked during the FGDs, both men and women at Kunlen mountain CPA (national park) stated that their CPA has more male committee members and more females as members. Although, the participants indicated that women and men living in this area can go into forest for taking forest products in equal opportunity but still more men play the leadership roles given consideration that men are more able to move across the areas, participate in meetings and make decisions while more women are accepted to stay home taking role of household work and care. In addition, women and men still consider gender norm has limited women's access to information related to agriculture and opportunity in being a community leader.

The CPA at Prasat Sambo district, Kampong Thom province has only one female committee member out of six committee members. The CPA is reportedly more than 10km from a community, which causes more concerns and limitation for women to be ranger and to participate in patrolling with their male counterparts. It was noted in discussion that the female committee member never joins the ranger group with men given a consideration that a single woman is inappropriate to go into the forest with men, especially at nighttime.

Ministry of Environment's Prakas 066 (article 13) states that women are encouraged to participate in committee vote. Therefore, MOE, PDoE and FGD's participants indicated that each CPA should encourage women's participation in CPA's committees and attending the forest patrols. Due to gender norms linked to movement in remote areas as well as roles within household (food preparation, childcare) as well as limited experience / capacity in engagement in decision making forum and patrol activities there are lower levels of engagement and opportunities for women within the CPA structures. Even where women are rangers their roles may be limited to cooking for other male rangers. Representatives of MoWA and PDoWA also observed the same, with gender norms still limiting opportunity and access of women.

Both CPAs at Kulen mountain and at Prasat Sambo district have their farming land, of which each member has approximately 1-2 hectares per household. These lands are mostly used for cashew and the farmers can earn similar amount annually which is $300-$500 per hectare, after labor cost. As indicated, most of household members produce cashew without using fertilizer or pesticide, partially due to price of these inputs compared to cashew prices. Most of FGD's participants indicated that price of agricultural inputs almost doubled during COVID-19, however, price of their outputs decreased. Almost all members indicated that producing cashew requires less time compared to rice and other crops, but farmers need to use external labors (women and men seasonal migrants, and

[9] Data on information of community protected areas in Cambodia, Ministry of Environment (2021)

laborers living in the same community) during harvest season which is costly (approximately $10-12 per person/day).

3.4. Access to agrometeorological services. Climate risk information is frequently shared from provincial department through telegram to the committee members/leaders and then shared to other members, as indicated by AC in Sot Nikum district, while AC in Santuk district, and the two CPAs can only access through the frequent announcement of the ministry and its provincial department (through TV, radio, Facebook, etc.,). In addition to this, the circulation of climate risk information is still broader (regional/zone level) than specific forecasts which farmers need to access and adapt into their daily agricultural production. As indicated by representatives of Ministry of Water Resources and Meteorology (MoWRAM), climate risk information can be technically forecast and circulated to more specific areas. The ministry also has commitment to train sub-national staff, especially women to provide responsive agrometeorological services to farmers.

Some members of AC and CPA are poor and vulnerable households, and most of them do not have smart phone to access for information, especially, climate risk information, technology, and market price. The PDAFF representatives indicated that to increase productivity, and get higher-price, farmers need to be "smart" using technology, machineries, and access to responsive climate information. Farmers can access to climate information and market price once they have smart phone and know how to access it. However, it is acknowledged that women still face number of disadvantages in their agricultural production including access to climate information, market, and technology.

Although, the climate risk information is often shared to members, female farmers still have lower access to this information and lack of capacity to interpret it into their adaptation and production. Female farmers indicated that they take all responsibility of household works and care every day. Since many men migrate for labor intensive works, female farmers experience a greater burden from household and care work, and agricultural production. Some farmers seemed to acknowledge that they did not take enough caution to climate risks, which can impact their production.

3.5. Access to financial services. Based on the AC's internal regulation (AC at Sot Nikum district), each member/household can put more than one share in the amount of 50,000 riel or $12.5. Within this share, each member/household can access AC's loan with a maximum amount of 200,000 riel or $50 per share. Of this limitation of inter-lending amount, the members still need to access a loan with a Micro-Finance Institution (MFI), of which they are required to deposit their collaterals. As indicated in the FGD, most of AC's members access to loan with MFI with different amounts.

As above mentioned, AC at Santuk district is facing their biggest challenge related to financial resources to start-up their AC's business operation with cashew nuts and later investment is cashew wine. During the FGD, the committee and members indicated they need approximately $500,000 to $700,000. AC's committee members (all men) have tried to reach out to MFI and Agricultural and Rural Development Bank (ARDB) to access to loan but no significant results have been received. The contributing constrain factors are considered to lack of collaterals, new start-up with a large amount of capital and business modality needs to be more convincing. The AC committee are still unclear how they can gain access to this level of finance.

When asked about individual members in FGDs with AC and CPA, most members have taken loans from MFI to buy their agricultural inputs, household consumable materials, schooling, and cultural

and traditional participation (i.e., wedding and funeral events). Some FGD participants indicated that they themselves and other members also buy the agricultural inputs from the suppliers by paying them during the harvest season, with an interest rate as compared to the direct payment. Based on MFI's requirements to access loans, farmers need to deposit their collaterals and prepare a series of supportive documents (administrative letters, business plan and business operation principal, etc.), which all need the agreement and fingerprints of both wife and husband.

Table 1: Agricultural Cooperative

Agricultural Cooperative									
Location	**# of AC**	**Total AC member**	**Female member**	**Total share**	**Total amount of share**	**Govt. grant**	**Non-govt. grant**	**Other grants**	**Total amount**
Cambodia	1,217	155,859	98,900	2,001,158	50,174,093,700	761,495,000	28,674,349,659	22,780,117,408	102,390,055,767
Kampong Thom	77	10,683	7,249	79,183	3,983,609,700	98,116,400	2,306,573,099	1,192,365,720	7,580,664,919
Siem Reap	58	8,688	6,817	63,314	1,802,030,000	53,402,000	1,750,563,700	755,116,069	4,361,111,769
Preah Vihear	43	10,635	7,046	191,854	3,887,640,000	13,485,600	1,076,886,100	1,530,733,834	6,508,745,534
Oddar Meanchey	36	4,596	2,888	13,441	888,250,000	13,050,000	1,061,733,300	442,434,462	2,405,467,762

Source: General Directorate of Agriculture, Department of Agriculture Cooperative Promotion (February 2022)

Table 2: Agricultural Cooperative Union

Agricultural Cooperative Union									
Location	**# Of AC Union**	**Total AC**	**Private company**	**# Of share**	**Amount of share**	**Govt. grant**	**Non-govt. grant**	**Other grants**	**Total amount**
Cambodia	15	272	04	1,703	1,809,500,000	1,000,000	389,439,600	1,183,057,743	3,382,997,343
Kampong Thom	1	20	0	21	21,000,000			2,000,000	23,000,000
Siem Reap	2	38	0	535	535,000,000	1,000,000		43,263,927	579,263,927
Preah Vihear	1	25	0	52	52,000,000		79,955,200	961,886,186	1,093,841,386
Oddar Meanchey	1	16	0	60	60,000,000		9,960,000	4,803,400	74,763,400

Source: General Directorate of Agriculture, Department of Agriculture Cooperative Promotion (February 2022)

3.6. Access to technology and skill. The AC at Sot Nikum district has received multiple supports from PDAFF, and NGOs on chicken raising skills. In the community there are village volunteers as focal person/trainer (the volunteers are also members of AC) who provides short technical training to other farmers/members on a variety of topics, including chicken raising, vaccination, and disease risk reduction. Purchasing companies can also provide capacity development opportunities, free of charge. As stated during the FGD, there is only one chick producer in the area and this does not have the capacity to supply enough chicks to all AC members. While skills can be transferred to other members, this opportunity is hindered by the need for investments to be made.

The AC at Santuk district, Kampong Thom province, indicated that the majority of farmers still rely on traditional practices to produce cashew nuts. Some farmers can afford to buy and use fertilizers and pesticides, but other farmers prefer growing cashew without other inputs due to financial reason. However, the AC noted that the production capacity for its members is still very low, with an average production of 2,800kg/year per hectare.

According to participants, the current production of cashew is only about half of what the AC could potentially produce. AC members indicated the need for improving their technical skills on cashew and other production lines around cashew (peeling cashew, cooking by machine, and packaging, etc.,). The AC has invested in agricultural machineries to meet the local demand of end user buyers for cashew products. Although, majority of committee members are men, but more women members are using these machineries for cashew nuts production as they were trained by NGO partners on how to use them correctly, and men seemed to spend more time for access to market and financial support with mobility and meeting outside their community.

However, some female members indicated that they need to improve their access to technology and use of machinery and quality of the cashew nuts to compete with private sector cashew nuts producers. The committee indicated that once financial resources are in place, they will be able to create more jobs for female members through cashew processing and the engagement in different product lines. As mentioned earlier in the report, the AC and their key committee members receive technical training and support from different stakeholders. One of those support is to process cashew fruits to be wine.

The ACs seemed to have different levels of access to skill and technology, based on the delivery mechanisms and geographical coverage of rural services. The business of the AC in Sot Nikum district appeared to be functional, with an active and productive committee, the regular engagement of its members, and the provision of various support from government provincial departments, NGOs and private actors. According to the respondents, technological and technical support is always available and easy-to-access by male and female farmers at their community.

The village volunteers who are local trainer and/or focal persons are well trained and accessible at village-based level. At the FGD both men and women acknowledged that, although more women are involved in agricultural production, they have lower access to technology and skill to enhance production levels and price. This gap was attributed to gender norms where women are socially expected to take household work and care duties and men are expected to work outside home and have better mobility inside and outside their community.

The CPA's committee and members who are mostly producing cashew tend to rely on traditional methods, using either none or a small amount of fertilizer and/or pesticide. All members living in the two assessed areas produce cashew only and sell cashew nuts to local traders or middlemen.

Respondents indicated that when training are organized in the community, men seem to be more likely to attend based on the local perception that men already have a good knowledge and absorb it faster, they have a greater mobility, and are responsible for making decisions. On the other hand, women are considered to attend training only when the man is not available. Household work and care duties are contributing factors to limit women's access to skill and technology. This gender gap is considered by AC, CPA and other farmer members as a disadvantage for producing agricultural products at their full capacity.

3.7. Access to market opportunities. AC at Sot Nikum district, Siem Reap province has two contracts with buyer companies who are running their business in Siem Reap. The contracts were facilitated by multiple actors including PDAFF, NGOs, and AC's committee leaders and members. The contracts are considered a strong market linkage between farmers/producers, value chain actors and buyers. As indicated during the FGD, price of chicken (1,600 riel/kg) is set for three months. Producers/farmers and buyers can re-negotiate every three months. Within these contracts, the AC's committee has good capacity to coordinate and manage supply and demand sides.

All members who attended the FGD stated that they are satisfied with contract condition, price and are motivated to continue and extend their production, if financial services made available for them. AC's committee leader and members indicated that they need to monitor their members closely related to selling chicken as all AC members can only sell to contracted buyers. In case members are found selling their chicken to non-contracted buyers, those members will be dismissed from the AC. The reason of doing so is because the AC requires to respect for contract's condition and ensure sustainable price for their products.

Access to market opportunity for AC at Santuk district, Kampong Thom seemed to be a concern as all members are still selling their cashew nuts once a year during harvest season and to middlemen and/or local traders with unstable price. The AC's committee leader and members indicated that having contract farming is uneasy for them as they do not have financial resource to manage buying cashew nuts from each member household to sell in large scale to big buyer companies. As indicated, the big buyer companies prefer to buy in large quantity of cashew nuts—not household by household. This presents challenges for access to markets until financial resources to manage wholesale and retail are achieved.

Despite facilitation from PDAFF and other NGOs, the process of negotiating contract farming remained difficult in Kampong Thom for cashew and rice. Most of participants stated that producing cashew, they can make little income per year or if they calculate as well by including their own labor cost, they almost earn nothing from it. However, they remained keen to continue the production because they do not want to keep land unused or at least they can earn from it, even it is little. Representatives from PDAFF and AC's committee members indicated that, even if moving their business to contract farming is challenging, they prefer to continue pursuing contracts with company buyers. PDAFF also showed its commitment to facilitating contract farming for ACs and encouraged the formation of new ACs to improve the quantity and quality of production and consequentially sell the agricultural products at a higher price and/or pursue market opportunities.

Farmers living in CPAs, indicated that all of the cashew nuts they produce are sold to local traders or middlemen within their community. The price is often dictated by buyers, of which the farmers seemed to have little or zero chance to negotiate the price. At the assessed areas, farmers are not organized as entrepreneur uniform to try increase their productivity or market price. As such, their cashew production result in low margin of quantity, earning and income each year. While most of farmers in the areas noted the importance of contract farming, they were unaware of the process involved in attaining contract farming. Representatives of MoE and PDoE indicated that institutions aim at creating more jobs for farmers, while ensuring the conservation of natural resources, especially forests. However, there are several challenges to address and more investments and initiatives are needed to support the farmers.

3.8. Control over resources and assets. The national constitution and other national laws, guarantee equality between men and women, including on control over resources and assets. National law on land

management considers equality between men and women to own their land legally. Once farmers are able to access to loans, both wife and husband are required to mutually agree to take the loan and both of them are required to sign on the loan document. Results from FGDs showed that women and men can equally own their land and take benefits from it. In CPA areas, women and men can equally benefits from forest products. However, there are structural barriers that may hinder the capacity of women to equally access to these resources. Some participants indicated that women could go into forest to collect forest products almost every day and that they can even collect more than men when the forest is near or close to their home (given example of forest on Kulen mountain, Siem Reap province). On the contrary, less women collect forest products if the forest is more than 10km from their village (Forest in Prasat Sambo district, Kampong Thom). As such, some women can only go inside the forest with the presence of a trusted man, considering their concern about safety and security during travel (from village to the forest) and inside the forest.

Once asked about control over agriculture land and other assets, both men and women (AC and CPA) indicated that they have equal rights to own land, agricultural equipment and household assets, considering that both of "their names are in land titles and acknowledged by authorities". However, some female participants who attended the FGDs did not know the size of their land indicating that their husband knew more clearly about this. Some participants indicated that both wife and husband can make equal decision to select crops, buy equipment and household expenses. However, some of the women and men who attended the FGDs indicated that men have better chance to make decision as "they are men" and have greater mobility and better knowledge and chance to access to information. As such, men should be the one making the "right" decision for agricultural products, use and control over resources and other assets.

3.9 –**Sexual Exploitation and Abuse and Sexual Harassment (SEAH) and Gender Based Violence (GBV)**

Within consultations it was noted that limited feedback was provided with regard to potential risks of SEAH and GBV linked to project activities. However the assessment notes that these risks exist based on broader trends within the target population and that these may be exacerbated by project activities. An assessment undertaken by the National Institute of Statistics noted that 33% of women over the age of 15, in rural areas reported experiencing violence[10] and that half of Cambodian women and more than a quarter of men believed there were conditions that justify violence against women. While change is occurring across the project population and has done since these surveys were conducted risks remain, especially linked to project interventions which will change the existing dynamics within rural households and communities. These elements will include:

Risks linked to minor labour influxes and enhanced mobility of actors – due to improved levels of productivity and enhanced value from production systems the project may result in minor influx of labour and employment income differentials in local communities. This may increase the demand for sex work, including the risk for trafficking of women for the purposes of sex work; or the risk of forced early marriage. Furthermore, higher wages for workers in a community can lead to an increase in transactional

[10] National Institute of Statistics, Directorate General for Health, and ICF International, 2015. Cambodia Demographic and Health Survey 2014. Phnom Penh, Cambodia, and Rockville, Maryland, USA: National Institute of Statistics, Directorate General for Health, and ICF International. Available at https://dhsprogram.com/pubs/pdf/FR312/FR312.pdf

sex. The risk of incidents of sex between laborers and minors, even when it is not transactional, can also increase.

The proposed project also envisages increased agricultural activities on and off the farm, improved productivity of critical food crops and will create short term employment opportunities in the project target areas, and hence mobility of both women and men will be enhanced. In light of the cultural aspects and gender biases, higher mobility may expose women to more risks of GBV.

Risks linked to changes in household labour and income balance - Women hold primary responsibility within target areas for household chores and caregiving, which require much time and energy. They will be adding another task to their already full plate by participating in the project. It cannot but result in less time spent in household chores and caregiving, which may well cause dissatisfaction of male members of the household and lead to violence against the women.

Women may also face opposition of their husbands and other male family members for their wish to participate in the project. In some households, the situation may escalate to violence. If their spouses are not involved in the project, the possibility of violence is higher. Women beneficiaries may be harassed or attacked also by men outside their households, who are not involved in the project and take out their frustration on the women.

If women's income increases, that fact may make men to feel insecure and turn violent against the women. If women refuse to give up their earnings to their husbands and other male family members, that is likely to trigger violence against the women.

Risks linked to project personnel and executing agencies – While all project related personnel are engaged on the condition that they follow all relevant Codes of Conduct, including those on sexual exploitation and abuse, risks exist that female and male beneficiaries may be asked for sex or related favours in exchange for participation in the project or for obtaining agricultural inputs.

Risks linked to changing household dynamics and potential for child labour - Considering that many project participants are heads of households, there is potential for children to be involved in project activities. FAO experiences show that almost no **agricultural intervention** is neutral in terms of **child labour**. The children are affected by the changes in adults' responsibilities in the field and also by the changes in the adults' ability to carry out household chores, which are caused by the changes in the field.

V. Conclusion and recommendations

The assessment has noted a number of key considerations and potential recommendations based on reviews of existing literature and past project development actions as well as consultations carried out as part of the assessment. The below section summarises these and links them with the points included within the gender action plan and main funding proposal. It is also noted that at present many of these interventions remain broad with more specific and targeted interventions to be developed as part of project implementation once specific target agricultural cooperatives and CPAs have been identified as well as through development of key project products (e.g. commodity strategic plan development), many of these elements will be coordinated by the National Gender Specialist with Support from FAO HQ and other consultants as outlined in the funding proposal. Key element of the central approach however include:

Agricultural system specific:

Access to agrometeorological services – there are significant limitation in womens' capacity to access effective agrometeorological information due to a number of factors with main elements of this outlined below:

- *Capacity* – existing gender disparities (linked to lower access to education and training) as well as access to technology such as mobile phones has limited the capacity of women to fully access and understand agrometeorological information as well as other market information.
- *Quality of systems* – existing agrometeorological information systems are limited in their scope and level of details as well as accuracy and as such are not as useful to any farmer, including women, as they are needed to be.
- *Coverage of systems* – the system currently does not cover areas in sufficient detail nor provide information tailored to different production systems with small scale systems, often women led, such as vegetable farming that have high needs for such systems often being poorly catered for.

Recommendations – in the development of the agrometeorological systems it is critical that consideration be given to a range of different needs with this including both information production and how that information is disseminated.

These recommendations have been considered and are included within the gender action plan and mainstreamed into the project document.

Access to information and market opportunities – as noted within the agrometeorological systems points above and the content of this report, women face a number of challenges linked to gender norms and systemic gender issues. A number of these key issues are noted below along with recommendations on steps to address them and links with how these are considered within the gender action plan and main project document.

- Access to information – women often have more limited access to information due to a number of reasons that are both due to structural inequalities (e.g. lower access to education) as well as gender norms (e.g. limited roles in decision making bodies as well as lower access to technology).
- Mobility – across all interviews lower levels of mobility for women (whether it be in terms of taking product to market, accessing more remote farm areas or being engaged in community PA patrols) was noted as a barrier to addressing a number of gender gaps.
- Gender norms within family – it was widely noted that women continue to full-fill many of the domestic roles within households and as such have less time available to undertake other activities linked to agricultural development of leadership roles.
- Access to finance – access to finance was also noted as a challenge across genders with the specifc gender based issues linked to women often undertaking enterprises that were 'new' to the market or with which financial service providers had less experience and were less well adapted to service.

Recommendations – Addressing these challenges requires a combination of elements with the overall approach needing to target a wholistic approach to addressing gender disparities. Key elements of this include:

- Improved access to training – it is critical that female headed house-holds and other relevant women gain access to training through the project with elements of this being women focused and catering to their specific needs.
- Awareness raising and training on gender issues – it is critical that there is broad action to support enhanced gender awareness across key project stakeholders to enhance understanding of the different challenges and needs faced across genders and how these can been responded to.
- Mainstreaming of gender based approaches into key sector and business plans as well as all elements of project implementation – building on the above elements gender elements but be mainstreamed into key project outputs in terms of strategic plans and agrometeorological and financial services products to ensure that these are able to both meet the needs of and help address disparities between genders.
- Development of gender aware products across the project – all project products from information and awareness raising materials to specific technical products should be gender aware to support improved access to them and that they are able to functionally support reductions in gender disparities.

Cross cutting

Effective quantification of the impacts of the project and changes in agricultural systems for women - – the project is seeking to demonstrate tangible improvements in the lives of women with many women within the farming community facing additional challenges linked to gender norms, including demands linked to domestic jobs within the household, as well as restrictions on mobility and access to information on improved agricultural techniques.

- *Recommendations - Adoption of W+ approach* – the W+ standard is the first women-specific standard that measures women's empowerment in a transparent and quantifiable manner, gives a monetary value to results and creates a new channel to direct financial resources to women. The standard would thus provide the duel benefit of providing both a mechanism for the project to monitor impact and a means by which beneficiaries can gain increased market access as well as direct financial support.
  The potential of this approach has been noted within Sub-activity 2.1.2.4: Explore the possibility of adopting and operationalizing W+ Standards to empower women farmers, particularly in the vegetable sector.

Violence against women (VAW), and Sexual Exploitation, Abuse and Harassment (SEAH), – these elements were not widely reported with consultations but remain a risk linked to project implementation but remain a risk, given the prevalence of violence against women in rural areas (with 33% of women reporting experiencing violence[11]) as well as the changing power and operational dynamics that project interventions will bring (as noted in Section 3.9 of the above assessment) and as such these risks must be addressed within the project implementation.

[11] National Institute of Statistics, Directorate General for Health, and ICF International, 2015. Cambodia Demographic and Health Survey 2014. Phnom Penh, Cambodia, and Rockville, Maryland, USA: National Institute of Statistics, Directorate General for Health, and ICF International. Available at https://dhsprogram.com/pubs/pdf/FR312/FR312.pdf

- *Recommendations* – the project must ensure that there are appropriate measures in place to raises awareness and understanding of VAW and SEAH and support education to reduce its risk. This must also be done in collaboration with an effective grievance and redress mechanism.

Grievance and redress (GRMs) – detailed information on the functioning of existing GRMs was not available as part of the assessment.

- *Recommendations* – as noted within the ESMF the project will utilize FAO's CO national GRM that will be under implementation when project starts. This mechanism will be further strengthened and supported through the project and through expertise of the National Gender Expert also cater for grievances raised on VAW and SEAH.

Sustainability – the sustainability of gender based interventions is critical with impacts needed to continue well beyond the project lifetime.

- *Recommendations* – the current project has sustainability built into its design using a model of public private social partnerships as a means to drive change, with actions to develop business plans and strategies that are then supported by improved access to finance, agrometeorological information and high value markets. These objectives are fully in line with key agricultural strategies and plans within Cambodia including the Climate Change Action Plan for Agriculture, Forestry and Fisheries Sector 2016-2020 (CCPAP-AFF) and Nationally Determined Contribution (NDC). From a gender perspective the project also aligns with the Neary Rattanak (NR) Phase V, as well as the *Gender and Climate Change Strategic Plan (GCCSP) 2014–2023* and second *Gender and Climate Change Action Plan (GCCAP) 2019–2023*, as well as the *master plan for gender and climate change (2018-2030)* that have been prepared and used as a roadmap for formulating the projects and programs by MoWA.

Based on these recommendations the following action areas were developed as part of the gender action plan with further information being provided in Annex 1 of the current document.

Annexes

Annex 1: Data collection tool

Questions for farmers

1. Is agriculture your main household income/employment?
    a. If yes, why?
    b. If no, what else you do for living?
2. Are you satisfied with your agriculture production?
    a. If no, why?
    b. If yes, why?
3. Do you think you can access to skill, and technology for higher quality of product and higher price?
    a. If yes, how can you access?
    b. If no, why?
    c. If no, what need to be done for you to improve your product?
4. Do you think you can access or have good market opportunity for your product?
    a. If yes, how can you access?
    b. If no, why?
    c. If no, what to do to help you?
5. Do you know about climate risk information?
    a. If yes, do you think you are aware of or can access within your village the climate risk information?
    b. If yes, what is it? And who share it with you?
    c. If no, how often you need it? And what is the best way to make you fully aware of it?
6. Once you want to extend your agriculture activities and productivities, do you access to credit?
    a. If yes, with whom?
    b. Do you think you can fully or easily access for it? If no, why?
7. At your household, can man and woman make equal decision to use and control over resources and or assets?
    a. if yes, how is the decision made?
    b. If no, why? Please give an example.

Specific questions for value chain actors: (questions for farmers will be used here too)

1. What are you doing in value chain?
2. Tell us, how do you access to skill, market info, technology, local network, credit?
3. Do you have any constraints?
    a. If yes, what are they?
    b. If no, how can you make it smoothly?
4. Do you have enough support to improve your value chain? Why and why not?
    a. If no, what kinds of support you need? From whom?
    b. If yes, who supported you? And how?

5. Do you have enough support from your family, your spouse?
6. Tell, us, how do you manage your time for family and work?
7. Do you think men and women can participate equally in value chain? Why? Why not?

Specific questions for CPA: (questions for farmers will be used here too)

1. what are you doing? Tell us, what do you feel of being the committee members?
2. What is/are the benefits you gain from participation in CPA?
3. Do you think men and women can benefit equally in from CPA?
    a. If yes, please give example
    b. If no, why?
4. Do you have any constraints?
    a. If yes, what are they? Please give an example
    b. If no, what made you do good? Please give an example.
5. Do you have enough support from your male counterparts, family, and spouse?
6. Tell us, how do you manage your time for family and work?
7. Do you think men and women can participate and make decision equally in CPA? why? Why not?
8. Will you encourage other women to participate in CPA?

Specific questions for AC committee and members: (questions for farmers will be used here too)

1. What are you doing? Tell us, what do you feel of being part of AC?
2. What is/are your benefits from it?
3. Do you have any challenges?
    a. If yes, what are they? Please give an example
    b. If no, what made you do good? Please give an example.

4. Do you think women and men can participate and make decision equally in AC?
    a. If yes, please give example.
    b. If no, why?
5. Do you think men and women can benefit equally in their participation in AC?
    a. If yes, please give example
    b. If no, why?
6. Do you have enough support from your male counterparts, family and spouse?
7. Tell us, how do you manage your time?
8. Will you encourage other women to participate in AC?
9. What is your next step to promote women's participation in AC?

Proposed question guides for key informant interview

1. Tell us, what is your institution/unit doing to promote women's participation in agriculture and higher productivity at community and workplace?
2. Do you have any written policy or strategy to promote women's participation?
    a. If yes, what are they?
    b. If no, why? And how do you operate?

3. Do you have any constraints in working to promote women participation at community and workplace?
    a. If yes, please give an example.
    b. If no, what have been done good?
    c. Do you have any good lessons learnt to share?
4. What have you observed about male and female farmers, value chain actors, producers and ACs?
5. Have you observed any inequality/challenge among them?
    a. If yes, what is inequality/challenge?
    b. If no, please give example
6. Do you think promoting women's participation at community and workplace is important?
    a. If yes, why? what to do better for them?
    b. If no, why?
7. Do you think promoting women's technical skill and knowledge is important? For example, in LAMS, and agrometeorological forecasting?
    a. If yes, what is your or your institutional/unit's plan?
    b. If no, why?
8. How do you work with other line departments/units and stakeholders including communities to promote women's participation, and capacity development?
9. Do you think women and men can have equal opportunity to access to skill, market, technology, climate info, credit…?
    a. If yes, how they can make everything equal?
    b. If no, why?
10. In your view, what need to be done to help women smallholder farmers, value chain actors, AC, CPA, FA, at the project areas improve their participation, skill, accessibility (i.e., info, market, technology, climate info), and higher product?
11. If you need to select three key priority challenges they are facing, tell us, what are they? And who are in roles to address those challenges more effectively?
12. What do they see as some of the biggest challenges to the PA's and CPAs in the target areas.
13. What do they see as biggest risks to the CPA's that may come out of the project support activities (e.g. agri expansion / stress on management committees / more people staying in areas?
14. What could be done to help reduce risks of negative impacts in target areas?
15. E.g. what control measures are in place to help manage risks e.g. how are agricultural areas in PA's managed to help avoid expansion / impacts, what systems are in place to support regeneration
16. Overall do they see there as being risks linked to the project e.g. impacts on protected areas, expansion of agriculture, increased use of chemicals etc
17. What mechanisms are in place to allow CPAs and other groups in PAs to raise grievances and have them redressed, how effective is this?

Questions for local bank and private actors

1. What have you observed around male and female farmers, value chain actors, producers and ACs?

2. Have you observed any inequality/challenge among them?
    c. If yes, what is inequality/challenge?
    d. If no, please give example
3. What is your company/bank doing to work with or support farmers, value chain actors, producers and ACs?
4. Do you have any disaggregation between women and men in your work?
    a. If yes, how do you the work?
    b. If yes, have you observed any changes, positive and/or negative results?
    c. If no, why?
5. In your view, what need to be done to female help formers, value chain actors, producers and ACs to have better participation, accessibility, productivity, and market price?
6. Do you have other suggestions?

References

Royal Government of Cambodia (RGC), 2001. The Land Law.

Royal Government of Cambodia (RGC), 2008. The Law on Protected Area.

Royal Government of Cambodia (RGC), 2013. Law on Agricultural Cooperatives.

Ministry of Agriculture, Forestry and Fisheries (MAFF), 2016-2020. Gender Mainstreaming Policy and Strategic Framework in Agriculture.

Food and Agriculture Organization of the United Nations (FAO), 2020-2030. Policy on Gender Equality.

Food and Agriculture Organization of the United Nations (FAO), 2018. Developing Gender-Sensitive Value Chains.

Food and Agriculture Organization of the United Nations (FAO), 2021. PEARL project proposal.

Food and Agriculture Organization of the United Nations (FAO), 2021. PEARL Stakeholder Engagement.

General Directorate of Agriculture, Department of Agriculture Cooperative Promotion, 2022. Data of Agricultural Cooperatives

Ministry of Environment (MoE), 2021. Data of Community Protected Areas.

Ministry of Environment (MoE), Prakas 066. Guidelines on procedures of formation of community protected areas.

Ministry of Women's Affairs (MoWA), 2019-2023. Five Years Strategic Plan for Strengthening Gender Equality and Women's Empowerment (Neary Rattanak V).

Ministry of Planning (MoP), 2019/2020. National Institute of Statistic, Cambodia Socio-Economic Survey.

The World Bank, 2018. Job diagnostic study.

PEARL Gender Action Plan

The table below provides the Gender Action Plan for the PEARL project. The project log-frame and design integrates and fully mainstreams gender within its targets with these elements providing an important guide for project implementation. As such the action plan has worked to integrate targets within those of the logframe as well as building off internal targets developed during project formulation.

It is critical to note that the whole project has a strong commitment to gender with all targets focusing on a 50% / 40/60% gender balance. As such while budget lines within the project are provided for key personnel including a Gender expert and consultants to conduct reviews and support mainstreaming of gender within training materials (with a total budget of $285,750), other costs linked to application of trainings are covered within the main project budget but with requirements for gender elements to be integrated within training, consultation and document review processes.

Table 1. Gender Action Plan for the PEARL project

Project Activity	GAP activity	Indicator	Baseline	Target	Timeline	Responsibility	Budget (USD)	
							Exclusively dedicated for GAP	Included in Project Activity
PMU	Training of project trainers/facilitators on GESI	Number of PMU, and EE staff trained on GESI to facilitate project gender interventions	**0**	All members of PMU staff and key EE project staff	Y1-7	PMU gender expert to conduct trainings, and ensure participation is documented.	-	Mainstreamed in activity budget
PMU	Training of project personnel on SEAH and GBV and the FAO GRM to handle such incidents	Number of project personnel trained on SEAH, GBV and project GRM	**0**	All members of PMU staff and key EE project staff	Y1-7	PMU gender expert to conduct trainings, and ensure participation is documented.	-	Mainstreamed in activity budget
Cross-cutting	Mainstream GESI and integrate gender-sensitization into all training materials and trainings	Percentage of training materials and curricula reviewed by a gender specialist	0	100%	Y1-7	PMU gender expert to review all trainings prior to approval. Gender experts may be hired and review materials if needed.	-	Mainstreamed in activity budget

Project Activity	GAP activity	Indicator	Baseline	Target	Timeline	Responsibility	Budget (USD)	
							Exclusively dedicated for GAP	Included in Project Activity
Cross-cutting	All beneficiaries informed of the projects zero-tolerance policy on SEAH, and the project's grievance redress mechanism (GRM), including SEAH-specific procedures (informative materials, and information mainstreamed within trainings)	Percentage of beneficiaries informed.	0	100%	Y1-7	Materials developed by PMU gender expert, in coordination with project staff.	-	Mainstreamed in activity budget
Outcome 1: Farmers' capacities are enhanced to manage climate impacts and related risks								
Output 1.1. Availability and access to agrometeorological advisory services tailored to target value chains improved among smallholder farmers and value chain actors, particularly women.								
Activities 1.1.1-1.1.3	Hiring of gender expert to support integration of gender considerations in site assessment (baseline conditions and capacities, data gaps) and in developing gender-responsive criteria to support the selection of existing stations and areas of need. Reporting by PMU on gender-responsive approach was applied during the site selection process.	a. Set of gender-responsive criteria for review of proposed stations and training locations b. Report on site selection process with a sub-section on gender drafted.	a. 0 b. 0	a. 1 set of criteria b. 1 report	Year 1	PMU gender expert to oversee reporting and hiring of gender expert. Gender expert to be hired to support elaboration of criteria.	45,000	Mainstreamed in activity 1.1.1-1.1.3 budget
Activities 1.1.1-1.1.3	Provide capacity building to TWG-AW, led by MAFF and MoWRAM, with additional experts from other relevant entities, on gender equality and social	Percentage of persons (male and female) engaged in station design and development	0	80 % of persons (50% women and 50% men)	Years 1-3	PMU gender expert to oversee consultations and hiring of gender expert.	99,000	Mainstreamed in activity 1.1.1-1.1.3 budget

Project Activity	GAP activity	Indicator	Baseline	Target	Timeline	Responsibility	Budget (USD)	
							Exclusively dedicated for GAP	Included in Project Activity
	inclusion as well as the project's policy on SEAH, to support the integration of gender considerations within station design and information provision.	trained on gender equality and social inclusion, and integrating gender within station design and information provision.				Gender expert to be hired to develop training materials and conduct trainings.		
Activities 1.1.1-1.1.3	Gender mainstreaming, including gender sensitization and raising awareness of SEAH and the project's zero tolerance policy, into all training of trainer (ToT) and training materials, as well as other project related informative materials.	Gender mainstreamed into all training materials for Component 1	Not mainstreamed	Mainstreamed.	Year 1-4	PMU gender expert to oversee gender mainstreaming, and external experts on topics related to gender mainstreaming. PMU gender expert to review materials and ensure gender mainstreaming.		Mainstreamed in activity 1.1.1-1.1.3 budget
Activity 1.1.2	Gender expert to revise all SOPs for the 4 crops to ensure gender equality and social inclusion is adequately mainstreamed/ reflected. All SOPs should mention the project's zero tolerance policy on SEAH.	Number of SOPs with gender equality and social inclusion mainstreamed.	0	4	Year 4	PMU gender expert to revise all SOPs.	99,000	-
Activity 1.1.3	Ensure the engagement and participation of women within awareness raising sessions.	% of female farmers in awareness raising sessions	-	At least 50%	Annually assessed	PMU gender expert to monitor and coordinate with technical staff		=

Project Activity	GAP activity	Indicator	Baseline	Target	Timeline	Responsibility	Budget (USD)	
							Exclusively dedicated for GAP	Included in Project Activity
	Coordinate with women's organizations and networks to ensure planned awareness raising sessions reach women. Time meetings at suitable hours, considering time restrictions and challenges for women.					to ensure targets are met.		
Outcome 2: Adaptive capacity of smallholder farmers and other local value chain actors, particularly women farmers and value chain actors, is increased through climate-resilient, high-value, and sustainable agriculture.								
Output 2.1: Premium market access opportunities for cashew, mango, organic rice, and vegetable producers and processors increased through climate-resilient and high-value certification programs (linking to Sub-components 2.2. and 2.3 for financing and technical capacity building).								
Activity 2.1.1:	Conduct training sessions for key stakeholders on gender equality and social inclusion as part of roadmap development. Support integration of gender into roadmaps through review and inputs to process and documents. Develop participatory baseline gender assessment of target cooperatives, CPAs and CFs with members with consideration of use of W+ approach. Assist cooperatives, associations, producer groups, CPAs, CFs, and agricultural unions in preparing crop-specific	Number of persons from agricultural commodity supply chains and provincial representative trained	0	To be set based on selection identification of key stakeholder groups and individuals within each province and supply chain.	Y1-4	PMU gender expert to conduct training.	15,750	4,243,085

Project Activity	GAP activity	Indicator	Baseline	Target	Timeline	Responsibility	Budget (USD)	
							Exclusively dedicated for GAP	Included in Project Activity
	action plans/business plans for operationalizing their respective roadmaps in an inclusive and gender-responsive manner.							
	Develop gender-responsive inter-value chain actor road maps at the provincial level. Support will be provided by gender experts to ensure gender is adequately integrated, including a a sub-section on gender equality and social inclusion. Invitation of women's organizations to planning and validation workshops.	Number of gender-responsive inter-value chain actor road maps.	0	4.	Y7	PMU gender expert to coordinate invitations, and ensure mainstreaming within road maps	-	
	Develop gender-responsive action/ business plans for climate-resilient, inclusive premium value chains. Development of guidelines to support GESI mainstreaming within plans, to ensure the differentiated needs and priorities of women are reflected. Gender experts to review business plans to ensure gender mainstreaming.	a.. Number of gender-responsive action/ business plans developed. b. Number of guidelines on mainstreaming GESI within action/ business plans c. Percentage of plans reviewed by a gender expert	a. 0 b. 0 c. 0	a. 124 ACs, FAs, PGs, CPAs, CFs, and agricultural unions with fully developed action/business plans, and at least 95 % of them fully operational. b. 100% of plans c. !00% of plans	Y7	PMU gender expert to oversee experts who develop guidelines and review action/ business plans.	-	

Project Activity	GAP activity	Indicator	Baseline	Target	Timeline	Responsibility	Budget (USD)	
							Exclusively dedicated for GAP	Included in Project Activity
Activity 2.1.2:	Revision and development of supplementary guidelines, tools and training materials, including a GESI-specific review to identify gaps and opportunities, and facilitate gender-responsive and socially inclusive revisions. A gender expert will be hired to support these efforts. This review will consider W+ as a potential tool to strengthen development of women's farming activities, enhance monitoring of project impacts as well as improved market access, results where relevant to support positive feedback in both project expansion and improved programming	Number of gender-responsive voluntary add-on supplementary guidelines, tools and training materials developed in the context of the certification programs identified under Activity 2.1.1.	0	Target to be determined based on number of standards adopted	Y4	PMU gender expert to oversee monitoring and reporting, and experts hired to support GESI mainstreaming across tools (in coordination with relevant technical staff)	-	295,300
Activity 2.1.2	Iinstitutional capacity assessment of capacity to integrate gender considerations and other safeguard elements and development of training and support materials to ensure EEs have adequate capacity to mainstream gender and	Acceptance of reports by target institutions.	0	4	Y2	PMU gender expert to guide implementation	-	

Project Activity	GAP activity	Indicator	Baseline	Target	Timeline	Responsibility	Budget (USD)	
							Exclusively dedicated for GAP	Included in Project Activity
	pay attention to women's empowerment needs and gender considerations. Assessment of the private sector partners' capacity to mainstream gender.							
Activity 2.1.2	Trainings on GESI, as well as the project's zero tolerance policy on SEAH. Technical support will be provided to support these institutions to strengthen their capacities and systems related to GESI (e.g. strengthening gender-responsive monitoring and evaluation, SEAH policies, among others).	Number of institutions who participated in trainings and have strengthened capacities on GESI	0	Implementation of trainings based on institutional assessment reports	Y3	PMU gender expert to guide implementation	=	
Output 2.2: Access to technologies for climate-resilient agriculture and value chain development improved among smallholder farmers and other value chain actors, particularly women (linking to Sub-component 2.1 to support the business plans of cooperatives, associations, producer groups, CPAs, CFs and agricultural unions).								
2.2.1	Assessment of gender-gaps in accessing finance by female farmers, as well as the context for female farmers to participate in and access finance via CPAs, CFs, agricultural unions, cooperatives and associations. This will be conducted by a national gender expert, and the recommendations will be integrated into guidelines for establishing FARM accounts, as well as	a. Gender-assessment for female farmers to access finance, including through their membership in CPAs, CFs, agricultural unions, cooperatives and unions. b.. GESI considerations included in	a. Not conducted b. Not integrated c. Specific product FARM not yet developed	a. Gender assessment conducted b. GESI integrated c. 60,000 women (approximately 40% of farmers engaged in target value chains within the provinces.	a. Y2 b. Y3-4 c. Y3-7	PMU gender expert to oversee national gender expert conducting assessment. PMU gender expert to revise training materials, guidelines and informative materials.	-	4,243,085

Project Activity	GAP activity	Indicator	Baseline	Target	Timeline	Responsibility	Budget (USD)	
							Exclusively dedicated for GAP	Included in Project Activity
	training materials (including ToT materials), and other awareness raising materials and strategies to strengthen GESI and gender-sensitization within these institutions. Development and dissemination of informative materials for women on opportunities to access finance.	training materials, guidelines and awareness raising materials to increase womens' awareness of finance opportunities, and to strengthen information dissemination and improved access through CPAs, CFs, agricultural unions, cooperatives and associations. c. Number of women informed on the available options and services for farmers and local value chain actors.				PMU gender expert to oversee monitoring and reporting, and will coordinate with the respective technical staff for adaptive management.		
Activity 2.2.1	Trainings for women's organizations, female farmers, and women-led businesses as part of AC ACs, FAs, PGs, CPAs, CFs, and unions of cooperatives annually training on financial	a.. % of women trained b. number of women-only trainings	a. Low levels of awareness with no formal trainings b. 0	a. 50% of all training participants are women. b. 25	Y5	PMU gender expert to oversee planning	-	

Project Activity	GAP activity	Indicator	Baseline	Target	Timeline	Responsibility	Budget (USD)	
							Exclusively dedicated for GAP	Included in Project Activity
	literacy and business development.							
Activity 2.2.1	Gender assessment, guidelines and training for the FARM account (trust fund) to be established for each beneficiary group to advance its business plan with clearly defined governance arrangements and ongoing business development support (i.e., FARM grants manual, Board of trustees, disbursement eligibility criteria, fiduciary and performance monitoring mechanisms).	Number of target cooperatives, associations, producer groups, CPAs, CFs and agricultural unions supported and accessing finance	0	124	Y5	PMU gender expert to oversee monitoring in close cooperation with technical project staff. Trainings to be conducted by technical staff, utilizing information developed by the PMU gender expert and other national gender experts.	-	
Output 2.3: Awareness and knowledge of climate-resilient and sustainable, high-value agriculture increased among farmers and other local value chain actors, particularly women farmers and value chain actors (linking to Sub-component 2.1 to support the operationalization of business plans by the cooperatives, associations, producer groups, CPAs, CFs and agricultural unions)								
Activity 2.3.1	Input from gender expert and gender-focused consultations (with women's groups and female farmers) into development of clearing house mechanism to ensure that it effectively captures gender-based information and provides fully gender responsive information.	a. Number of consultations with women's groups on clearing house system, and the differentiated needs of female farmers and value chain actor b. Clearinghouse system is gender-	-	Yes – clearinghouse system is gender-responsive	Y3	PMU expert to oversee that the system is gender-responsive.	-	1,350,990

Project Activity	GAP activity	Indicator	Baseline	Target	Timeline	Responsibility	Budget (USD)	
							Exclusively dedicated for GAP	Included in Project Activity
		responsive, and includes information on best practices for climate-resilient, inclusive, gender-responsive, and high-value agriculture						
Activity 2.3.2	Train extension officers, retailers, hoteliers, restauranteurs, and traders/exporters on gender equality and social inclusion that increases understanding of gender considerations within farming groups and improves quality of service delivery and the consideration of gender-differentiated contexts and needs.	Number of extension officers, retailers, hoteliers, restraunteurs, and traders/ exporters trained on GESI	0	Accumulative total of 550 (40-50% women) PDAFF and PDoC staff, including extension officers, district administration officers, commune and village extension agents, and NGOs trained over the project lifetime through TOT.	XYZ	PMU gender expert to ensure gender is mainstreamed in trainings	27,000	
Activity 2.3.2	Promote gender responsive CRA practices and technologies, ensuring technologies are adequately screened and communicated for potential gender-responsive development benefits (e.g. value chains with high representation of women, time-saving practices).	a. Percentage of beneficiaries (sex-disaggregated) who take up gender-responsive and climate-resilient agricultural practices and technologies b. Percentage of beneficiary	a. – b. -	a. 60% (of which 50% are women) b. 85% (of which 50% are women)	Y7	PMU gender expert to oversee gender-reporting in close coordination with project technical staff to ensure adaptive management.	-	1,377,990

Project Activity	GAP activity	Indicator	Baseline	Target	Timeline	Responsibility	Budget (USD)	
							Exclusively dedicated for GAP	Included in Project Activity
	Ensure extension meetings are held at times suitable for women (where possible communicating with leaders of farmer groups and womens organizations to find suitable times and locations).	farmers (sex-disaggregated) with increased knowledge of gender-responsive and climate-resilient agricultural practices and technologies						
Activity 2.3.2		Percentage of promoted practices that are tailored for women farmers and value chain actors against the inception baseline.	-	40%	Y4	PMU gender expert to report in close coordination with project technical staff.	-	
Output 2.4: Upper watershed areas restored and protected to increase agroecological functions for downstream farming activities in the target areas.								
Activity 2.4.1	During awareness raising processes, ensure gender sensitization. Review of CF and CPA management plans to ensure gender sensitivity and support to enhancement and strengthening including section on gender considerations and SEAH and support to implementation and review of plans	Number of CPAs and CFs implementing plans in line with gender considerations	0	13	Y5	PMU gender expert to oversee monitoring and evaluation.	-	2,296,110
Outcome 3: Gender considerations and enabling conditions for climate-resilient agriculture are ensured through a coherent and robust policy, legal, and institutional framework.								

Project Activity	GAP activity	Indicator	Baseline	Target	Timeline	Responsibility	Budget (USD)	
							Exclusively dedicated for GAP	Included in Project Activity
Output 3.1: Regulatory and institutional arrangements and capacity relevant to developing certification-based value chains strengthened to provide enabling conditions for climate-resilient, inclusive high-value and sustainable agriculture and food security.								
Activity 3.1.1	Regulatory and institutional revisions to be accompanied by an assessment on GESI to identify challenges and opportunities for mainstreaming GESI. Conduct gender mainstreaming within revisions to regulatory and institutional framework for climate-proofed certification programs, based on the findings of the aforementioned review.	a.. GESI review conducted to highlight opportunities and challenges related to GESI in the institutional and regulatory framework. b.. Revised regulatory and institutional framework have GESI mainstreamed and are gender-responsive.	a..– b. GESI not mainstreamed	a. GESI review conducted b. GESI mainstreamed	A Y3 B Y4	PMU gender expert to oversee hiring of gender expert to conduct review and support gender mainstreaming in the regulatory and institutional framework.	-	145,600
Activity 3.1.2:	Conduct gender assessment of lending scorecard and integrate revisions within score card system. .	Review conducted and amendments made.	No review	Review undertaken and recommendations acted on	Y 3	PMU gender expert to undertake.	-	400,172
Activity 3.1.3	Ensure memorandum of understandings (MoU) with banks include also commitments to strengthen GESI.	Number of commercial banks with memorandums of understanding (MoUs) signed to operationalize the scorecard, including commitments to support GESI	0	At least 3	Y 4	PMU gender expert to support technical team to draft MoUs and support with GESI-related outreach and commitments.	-	Mainstreamed in Activity 3.1.3 budget

Project Activity	GAP activity	Indicator	Baseline	Target	Timeline	Responsibility	Budget (USD)	
							Exclusively dedicated for GAP	Included in Project Activity
Output 3.2: Gender-responsive landscape-level agroecology monitoring system (LAMS) developed to crowd in public and private investments in climate-resilient, high-value and sustainable agriculture.								
Activity 3.2.1	Undertake baseline assessment for LAMS design to ensure the system considers gender-differentiated needs to ensure gender-responsive system design. Conduct consultations with women's groups and networks to inform LAMS design (including the baseline review and design report), and ensure gender-differentiated considerations are reflected.	Baseline review for LAMS design conducted that outlines needed adjustments to strengthen gender equality and social inclusion (GESI) within the system.	-	Baseline review for LAMS design conducted, including with section on GESI	Y4	PMU gender expert Where necessary, the PMU gender expert will coordinate with the respective technical staff and service providers to ensure gender-related feedback is integrated into the system.	-	594,104
Activities 3.2.1 and 3.2.2	Gender equality and social inclusion mainstreamed in awareness raising and training materials on LAMS. PMU gender expert to revise all materials.	GESI mainstreamed in awareness raising and training materials on LAMS	Materials not yet developed	GESI mainstreamed in awareness raising and training materials on LAMS	Y5	PMU gender expert to revise all awareness raising and training materials.	-	
Activity 3.2.2	Develop a communications and information dissemination strategy to ensure women use and benefit from LAMS.	Gender-focused communications and information dissemination strategy developed	Not developed	Developed.	Y5	PMU gender expert to support with the elaboration of the strategy	-	53,250
Activity 3.2.2	Conduct stakeholder awareness raising events on LAMS with women's organizations, and female-owned businesses	a. Number of women's groups and organizations trained on LAMS	a. – b. – c. -	a. At least 10 b. 50%	Y5	PMU gender expert to oversee participation of women within	-	

Project Activity	GAP activity	Indicator	Baseline	Target	Timeline	Responsibility	Budget (USD)	
							Exclusively dedicated for GAP	Included in Project Activity
	to ensure the system supports them with climate-informed decision-making, monitoring, and reporting, and to also enable active management and feedback to ensure the differentiated needs of women are reflected within the tool.	and supporting awareness raising b. Percentage of females attending awareness raising sessions and trainings on LAMS c. Number of beneficiaries (sex-disaggregated) utilizing LAMS regularly using for climate-informed planning and investment decision-making..		c. At least 2,500 beneficiaries (1,250 women, 1,250 men)		trainings and use of the platform. Where necessary, the PMU gender expert will coordinate with the respective technical staff and service providers to ensure gender-related feedback is integrated into the system.		

_____