



Promoting Climate-Resilient Livelihoods in Rice-Based Communities in the Tonle Sap Region

Part I: Project Information

GEF ID

10177

Project Type

FSP

Type of Trust Fund

LDCF

CBIT/NGI

CBIT **No**

NGI **No**

Project Title

Promoting Climate-Resilient Livelihoods in Rice-Based Communities in the Tonle Sap Region

Countries

Cambodia

Agency(ies)

FAO

Other Executing Partner(s)

Ministry of Agriculture, Forestry and Fisheries (MAFF) and Ministry of Environment (MOE)

Executing Partner Type

Government

GEF Focal Area

Climate Change

Taxonomy

Focal Areas, Climate Change, Climate Change Adaptation, Community-based adaptation, Complementarity, Adaptation Tech Transfer, Least Developed Countries, Ecosystem-based Adaptation, Climate resilience, Climate information, Disaster risk management, Private sector, Livelihoods, Innovation, Climate finance, National Adaptation Programme of Action, National Adaptation Plan, Mainstreaming adaptation, Strengthen institutional capacity and decision-making, Influencing models, Demonstrate innovative approach, Deploy innovative financial instruments, Stakeholders, Type of Engagement, Participation, Information Dissemination, Communications, Awareness Raising, Local Communities, Civil Society, Community Based Organization, Private Sector, Individuals/Entrepreneurs, SMEs, Beneficiaries, Gender Equality, Gender Mainstreaming, Women groups, Sex-disaggregated indicators, Gender-sensitive indicators, Gender results areas, Participation and leadership, Access to benefits and services, Access and control over natural resources, Knowledge Generation and Exchange, Capacity Development, Capacity, Knowledge and Research, Knowledge Generation, Learning

Rio Markers

Climate Change Mitigation

Climate Change Mitigation 0

Climate Change Adaptation

Climate Change Adaptation 2

Submission Date

4/4/2019

Expected Implementation Start

7/1/2021

Expected Completion Date

6/30/2026

Duration

60In Months

Agency Fee(\$)

848,580.00

A. FOCAL/NON-FOCAL AREA ELEMENTS

Objectives/Programs	Focal Area Outcomes	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
CCA-1	Outcome 1.1 Technologies and innovative solutions piloted or deployed to reduce climate-related risks and/or enhance resilience	LDC F	7,632,420.00	52,986,224.00
CCA-2	Outcome 2.1 Strengthened cross-sectoral mechanisms to mainstream climate adaptation and resilience Outcome 2.3 Institutional and human capacities strengthened to identify and implement adaptation measures	LDC F	1,300,000.00	13,409,056.00
Total Project Cost(\$)			8,932,420.00	66,395,280.00

B. Project description summary

Project Objective

Rice based communities in the Tonle Sap region of Cambodia reduce their climate vulnerability and increase their resilience to climate change through an ecosystem-based, market-driven approach.

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
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Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
Component 1: Improving the enabling environment for climate change adaptation in the rice and related priority sectors through integrated policies and planning.	Technical Assistance	<u>Outcome 1.1.:</u> Strengthened national and sub-national climate change adaptation policies, planning frameworks, and governance.	<p><i>Output.1.1.1.:</i> National and sub-national institutions have improved capacity for comprehensive planning and implementation.</p> <p><i>Output 1.1.2.:</i> Cross-ministerial and cross-sectoral coordination in climate change adaptation and agriculture improved, in collaboration with the Cambodia Climate Change Alliance.</p> <p><i>Output 1.1.3.:</i> Integration of water-related information into agricultural CCA planning and decision processes at national and landscape levels strengthened.</p> <p><i>Output 1.1.4.:</i> Financial and incentive mechanisms through MAFF for climate-resilient agriculture developed.</p>	LDC F	1,299,550.00	8,056,800.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
Component 2: Supporting resilient production systems in rice-based communities for improved livelihoods	Investment	<u>Outcome 2.1.:</u> Increased resilience and adaptive capacities of production systems and the natural resource base.	<p><i>Output 2.1.1.:</i> On-farm diversification for improved resilience against climatic variations demonstrated and scaled out.</p> <p><i>Output 2.1.2.:</i> Use of certified, premium, and stress-tolerant seeds increased.</p> <p><i>Output 2.1.3.:</i> Increased adoption of climate-resilient on-farm technologies and practices.</p> <p><i>Output 2.1.4.:</i> Credit access for rice farmers improved.</p>	LDC F	3,439,450.0 0	20,102,400.0 0

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
Component 3: Scaling up adaptation technologies and practices in selected value chains through partnerships, markets, and investments	Investment	<u>Outcome 3.1.:</u> Scaling of adaptation innovations, technologies, and new markets, and scaling-up agribusinesses, employment, and empowerment at community level.	<p><i>Output 3.1.1.:</i> The performance of agricultural cooperatives improved via human capacity building.</p> <p><i>Output 3.1.2.:</i> Contract farming models negotiated between agricultural cooperatives and rice processors demonstrated and up-scaled, incorporating crop insurance.</p> <p><i>Output 3.1.3.:</i> Pilot locally prioritized standards-based production</p> <p><i>Output 3.1.4.:</i> Post-harvest handling, collection, storage, and drying facilities at the processor level enhanced and climate-proofed.</p> <p><i>Output 3.1.5.:</i> Credit availability for rice processors improved.</p>	LDC F	2,414,450.00	20,102,400.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
Component 4: Building effective knowledge management, innovations, and monitoring & evaluation systems	Technical Assistance	<u>Outcome 4.1.</u> : More effective knowledge management and assessment of adaptation innovations	<p><i>Output 4.1.1.</i>: Project management mechanisms established.</p> <p><i>Output 4.1.2.</i>: Tools, methods, and approaches for monitoring and tracking project progress adopted.</p> <p><i>Output 4.1.3.</i>: Information and M&E systems enhanced.</p> <p><i>Output 4.1.4.</i>: Inter-regional knowledge-sharing fostered.</p> <p><i>Output 4.1.5.</i>: Innovation and new market opportunities fostered.</p>	LDC F	1,353,617.00	14,972,000.00
Sub Total (\$)					8,507,067.00	63,233,600.00
Project Management Cost (PMC)						
			LDCF	425,353.00	3,161,680.00	
			Sub Total(\$)	425,353.00	3,161,680.00	
			Total Project Cost(\$)	8,932,420.00	66,395,280.00	

C. Sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
Recipient Country Government	Ministry of Agriculture, Forestry, and Fisheries (MAFF)	In-kind	Recurrent expenditures	330,000.00
Recipient Country Government	Ministry of Agriculture, Forestry, and Fisheries (MAFF)	Grant	Investment mobilized	3,200,000.00
Recipient Country Government	Ministry of Environment (MOE)	In-kind	Recurrent expenditures	809,280.00
GEF Agency	FAO	Grant	Investment mobilized	6,300,000.00
Other	GIZ	Grant	Investment mobilized	6,500,000.00
Other	IRRI	Grant	Investment mobilized	5,800,000.00
Civil Society Organization	WCS	Grant	Investment mobilized	4,000,000.00
Donor Agency	ADB	Loans	Investment mobilized	23,000,000.00
Donor Agency	IFAD	Loans	Investment mobilized	15,000,000.00
Donor Agency	UNDP	Grant	Investment mobilized	1,456,000.00
Total Co-Financing(\$)				66,395,280.00

Describe how any "Investment Mobilized" was identified

For descriptions of mobilized investments, please see descriptions in Section 1.a.4: Incremental/ Additional Cost Reasoning.???

D. Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)
FAO	LDC F	Cambodia	Climate Change	NA	8,932,420	848,580
Total Grant Resources(\$)					8,932,420.00	848,580.00

E. Non Grant Instrument

NON-GRANT INSTRUMENT at CEO Endorsement

Includes Non grant instruments? **No**

Includes reflow to GEF? **No**

F. Project Preparation Grant (PPG)

PPG Required **false**

PPG Amount (\$)

200,000

PPG Agency Fee (\$)

19,000

Agency	Trust Fund	Country	Focal Area	Programmin g of Funds	Amount(\$)	Fee(\$)
FAO	LDC F	Cambodi a	Climat e Change	NA	200,000	19,000
Total Project Costs(\$)					200,000.00	19,000.00

Part II. Project Justification

1a. Project Description

1.a.1. Adaptation problems, root causes, and barriers that need to be addressed (systems description).

Country Context

The Kingdom of Cambodia is situated on the southern part of the Indochina peninsula, spanning a total land area of 181,035 km². The country is located within the tropical Indomalayan ecozone and the topography consists of a coastal area along the southwest of the country and low-lying central plains, including the Tonle Sap basin and the Mekong River flood-plains, which are surrounded by mountainous and highland regions. Cambodia is bisected by the Mekong River Basin, which runs from north to south through the country. Cambodia's hydrology is dominated by the Mekong River and its major tributaries, including the Tonle Sap River, which joins the Tonle Sap Lake. The Mekong's water disperses into the wetlands of the central plains and heavily affects the seasonal nature of the Tonle Sap Lake, including both regular monsoon flooding in the basins and localized droughts in the plains.

Cambodia has a tropical monsoon climate, characterized by a rainy season and a dry season. The rainy season, which lasts from May to early October, accounts for 90% of annual precipitation. 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 geographical incidence of extreme weather events such as droughts and floods varies, and while floods affect lowlands areas, the geographical distribution of droughts is widespread. Storms occur more frequently between August and November, with the highest frequency in October. The country is rarely exposed to the full force of tropical cyclones and typhoons due to its surrounding mountain chains.^[1]¹

The population of Cambodia is estimated at 16.3 million (2019) and is growing at an average annual rate of 1.46%, among the highest in Southeast Asia.[2]² Close to 80% of Cambodia's population live in rural areas; more than half of the population lives in the central plains and about 30% around the Tonle Sap Lake.

Cambodia is a Least Developed Country (LDC) and poverty remains a serious constraint to the country's economic development. Although poverty rates have declined significantly in recent years, the economy remains vulnerable to external shocks and natural disasters. Rural communities in particular are characterized by poverty, hunger, and malnutrition, with approximately 90% of the country's poor living in the countryside.[3]³ Households engaged in agricultural activities have the highest incidence of poverty. Rural poverty and food insecurity are closely associated with limited access to land, forests, fisheries, and other natural resources, as well as limited opportunities in the industrial and service sectors. Poor health, combined with high healthcare costs, is the major cause of household poverty.[4]⁴

Cambodia's economic development is heavily dependent on the country's rich natural resource base. Agriculture remains an important sector of the economy, representing roughly 23% of the gross domestic product (GDP) in 2017.[5]⁵ The agricultural sector is also the main source of livelihood for the majority of the rural population and is essential to poverty reduction and household food security.

Cambodia's Agricultural Sector

Almost 70% of the Cambodian population is engaged in agriculture, about 60% of whom are women. The majority of farmers are smallholders, with 21% of households being landless and a further 45% owning less than one hectare.[6]⁶ Agricultural production is predominantly rain-fed and characterized by low input and low to moderate soil fertility, making the sector highly dependent on climatic conditions. Rice is Cambodia's main staple and provides approximately 70% of nutritional needs. It is the principal crop of farmers, rice production accounts for 15% of agricultural value addition, and

paddy occupies 75% of cultivated land. Rice production, processing, and marketing employ about 3 million people, which is more than 20% of the country's working-age population.[7]⁷

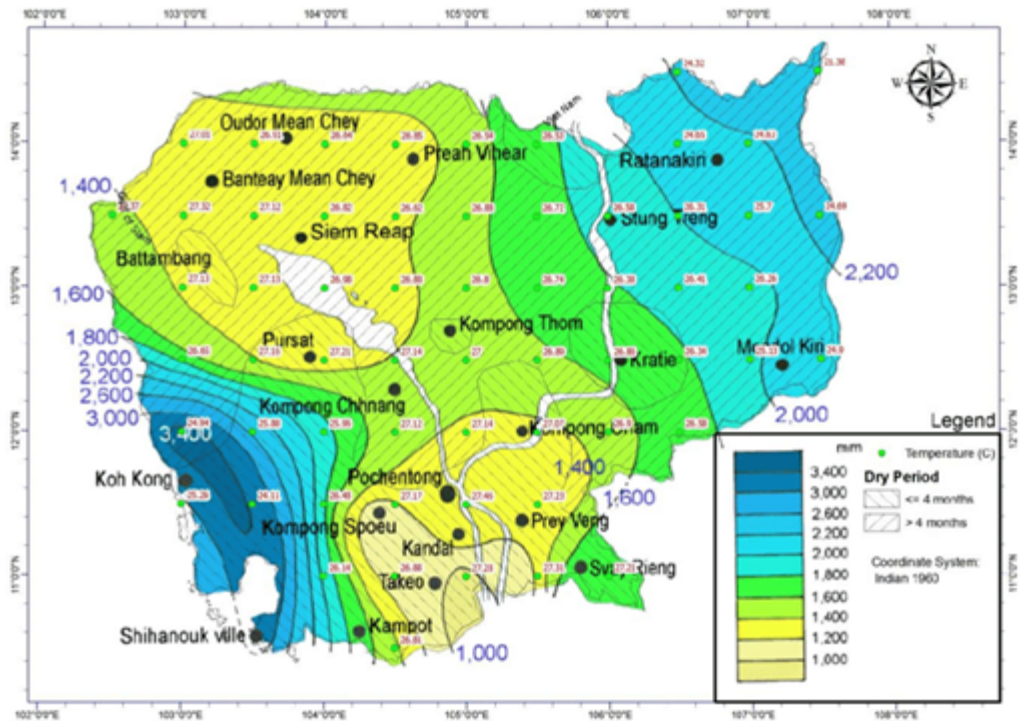
Around 80% of rice production originates from local varieties that are cultivated during the rainy season. High-yielding varieties are mainly planted during the dry season, and account for the remaining 20% of production. Figure 1 shows the cropping seasons for rice. Rice productivity is highly dependent on weather conditions, and both flooding and droughts have resulted in significant decreases in production. Yields have gradually increased over the last decade, but remain among the lowest in Asia.

Figure 1: Rice Crop Calendar

Crop (season)	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Rice (rainy)		sow			grow			harvest				
Rice (dry)							sow	grow	harvest			

Source: FAO GIEWS

Figure 2:: Map of Typical Precipitation and Dry-season Duration, 1981 ? 2004[8]⁸



Around 50% of paddy (harvested, unprocessed rice grain) produced in Cambodia is exported to neighboring countries (primarily Vietnam and Thailand) for milling and further distribution, which represents a huge lost opportunity for Cambodian rice millers and traders to add value, export directly, and create employment locally. Limited capacities to comply with premium quality and food-safety standards constrain Cambodian producers' access to international rice markets despite strong market demands.[9]⁹

Four other food crops—corn, cassava, soybean, and mung bean—occupy approximately 14% of Cambodia's crop area. The remaining 3% is used for growing vegetables, sesame, peanut, sugarcane, sweet potato, potato, tobacco, and jute. Animal husbandry is traditionally practiced at the household level. Cattle and buffalo provide most agricultural draught and manure for fertilizing crops, and constitute essential household assets. Many rural families raise pigs and chickens at the household level.[10]¹⁰

Basic Typology of Rice-production Systems in Cambodia

The following 3-part typology is a simplification of the various rice-farming systems used in Cambodia, but is useful for understanding the broad categories of systems in terms of the stakeholders, climate-related risks, constraints, and opportunities. It is also worth noting that some farming systems do not fit neatly in a single category or are in the process of transitioning from one to another (e.g., in response to changing economic conditions, access to irrigation, etc.).

In general, rice-production systems in Cambodia fall into three categories: extensive agriculture, intensive agriculture, and agro-ecological production.

- I. Extensive agriculture is characterized by low use of inputs, low risk, low resource efficiency, and low returns. This system is most often associated with subsistence farmers who cultivate relatively smaller holdings (usually less than 2 ha) that suffice for household consumption, plus some excess (perhaps 20%) to sell as a cash crop. These farmers typically prefer traditional practices and local varieties, which are often photo-periodic/ -sensitive (i.e., relatively longer growing seasons) and are preferred for flavor, suitability for traditional cooking, and suitability for historical climatic patterns and production techniques. These seeds are very rarely certified for quality and are often saved for replanting; there is a high tolerance among farmers for intermixed varieties. Seeds are typically dry broadcast, because although it generates lower yields, it requires less labor or mechanization (vs. direct-sowing, transplantation, etc.). For the same reason, little labor or capital is directed to land preparation (e.g., levelling), crop maintenance, soil management, pest management, etc. This form of production is nearly always rain-fed (little or no access to irrigation), such that dry-season cropping is rare, even for other crops and particularly for cash crops.

These farmers tend to migrate to access non-farm income and return at harvest time. They face labor shortages (and concomitantly high labor costs) and, when possible, hire mechanized services for land preparation, sowing, harvesting. Post-harvest, these farmers are typically price-takers, because they sell any excess quickly in order to repay their production loans as soon as possible. These farm-gate sales are usually of low-market-quality mixed wet paddy to convenient middle-men. Given that sellers have typically grown the same variety on the same schedule as most other farmers in the area, the market is flooded and prices are low. In these systems, rice production is more a matter of food security and culture than a business. Incomes for families in these systems derive more from wage labor and remittances (both typically associated with migration) than from farming.

II. Intensive agriculture is characterized by high use of inputs, higher yields, higher efficiencies, greater market access, greater farmer interest in improving outcomes (e.g., increasing yields), use of non-traditional varieties, and more formal integration in value chains (e.g., via production contracts, established relationships with suppliers and processors, etc.). These farmers have better access to inputs (e.g., fertilizer, quality seeds) and services (e.g., mechanization, agricultural cooperatives), often have benefitted from previous development-related opportunities (e.g., technical assistance via MAFF, private sector, NGOs, FOs), and have better water access (e.g., typically with at least some degree of irrigation). They use various forms of seeding?including broadcasting, direct-seeding, and sowing?depending on various factors. Their selection of varieties depends largely on the targeted buyer and markets. They often grow traditional varieties, but have also adopted improved modern varieties provided by MAFF, the private sector, and NGOs?e.g., fragrant rice, jasmine rice, IRRI?s high-yielding varieties such as CAR 15, and high-value traditional varieties such as Phka Rumduol, Phka Malis, Sen Pido, and Somali. Such varieties typically require higher investments in management and inputs (e.g., fertilizers, crop protection, weed control, irrigation), but can generate higher income if properly linked with markets. When improved varieties are used, they are often grown in locations with good soil conditions, good accessibility for machinery, proximity to irrigation, etc. Farmers in this type of production system tend to invest more in rice production as a livelihood and typically do not rely heavily on migration-based income.

III. Agro-ecological production, the least prevalent system of rice production in Cambodia, is characterized by the generation of benefits for (or at least mitigated detriments to) people and the environment. These systems?also referred to as biologically or naturally enhanced niche systems?are characterized by their geographical contexts; they are often located near forested or preserved areas and are typically rain-fed or irrigated via nearby creeks, springs, etc. Such systems improve or maintain high soil fertility and have high indigenous yield carrying capacities (i.e., yields without adding mineral fertilizers), though agro-ecological production is not necessarily organic (nor is organic production necessarily agro-ecological). In agro-ecological production systems, rice fields often are smaller than in other systems due to the natural topography, such as in the form of small terraces along slopes, allowing better management (e.g., soil preparation, puddling, levelling, water management) and enable labor investments by farmers (e.g., transplanting, crop management, supplemental irrigation).

Such systems require greater farmer knowledge of production practices and ecological conditions, and typically require investments from farmers. Given that investments in such systems can take multiple seasons to yield benefits, transitions to such systems often require strong outside transitional support or market incentives (i.e., ?pulls?). Moreover, although such systems are more resilient to climatic shifts and shocks, they also typically have lower crop yields than do intensive systems. Therefore, these systems are often located in areas not well suited to mechanization, which means that they are also sensitive to labor costs, market

demand for premium pricing on production practices, and the credibility of associated prestige labelling.

Agro-ecological production systems are currently comparatively rare in Cambodia. Examples can be found in Preah Vihear province in conjunction with Ibis Rice, a brand of fragrant, organically grown Malis Rice. Wildlife Conservation Society^[11] (WCS) and Sansom Mlup Prey (SMP) have been supporting around 1,000 smallholders' farmers to produce and market Wildlife Friendly Ibis Rice, which garners a 20% price premium. Ibis Rice has been certified organic to U.S and E.U. standards since 2016. Ibis Rice farmers produced more than 435 tons of organically grown, fragrant Malis during the 2013-2014 harvest season.

Project Site Context

The project's sub-national activities will target five provinces surrounding Tonle Sap—Pursat, Battambang, Banteay Meanchey, Siem Reap, and Kampong Thom—because these provinces face high climate-related risks with similar threats and opportunities. Figure 3 depicts a map of the project's targeted provinces.

Figure 3: Map of Project's Targeted Provinces

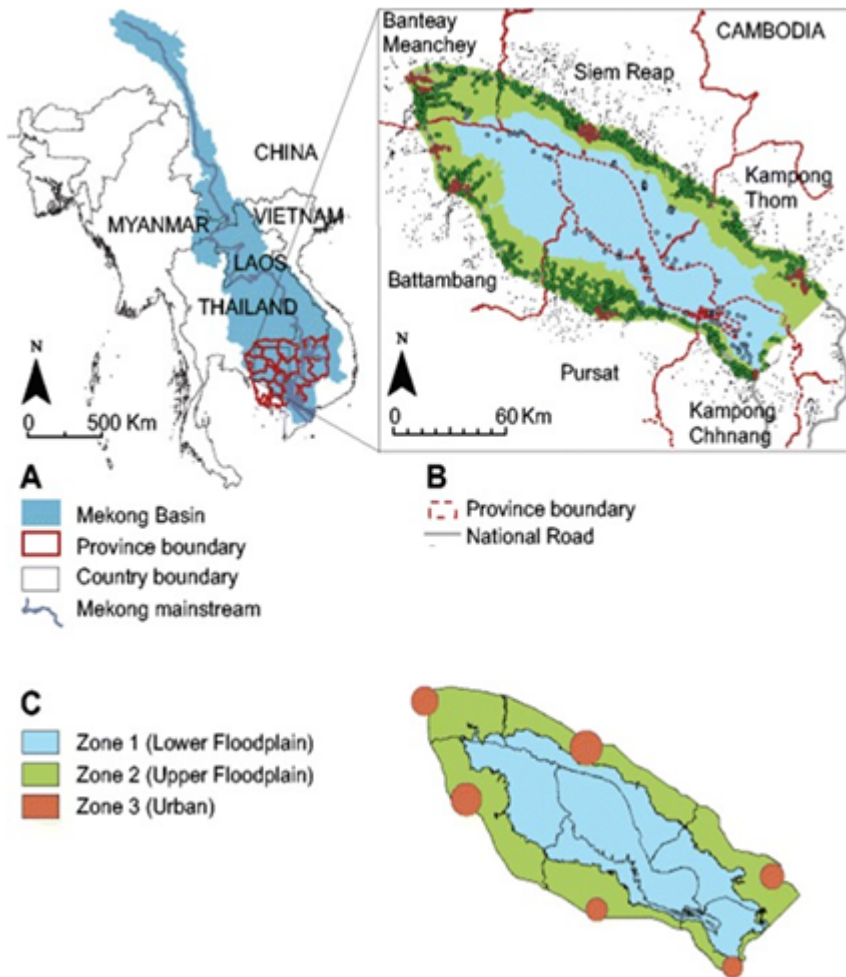


The Tonle Sap plain is a complex hydrological system, composed of (i) the 2,600 km² permanent shallow lake, Tonle Sap, (ii) the 120 km-long Tonle Sap River that connects the lake to the Mekong, and (iii) a 12,876 km² floodplain covered with a mosaic of natural and agricultural habitats that the Mekong River replenishes with water and sediments annually. The extreme seasonal inter-phase between flood and drought in the floodplain determines major habitat types, geochemical processes, ecological interactions, and human activities interplaying in the Tonle Sap.^{[12]¹²}

Thus, the Tonle Sap plain is divided into three zones (see Figure 4) that relate to the annual flood pulse. *Zone 1* (Lower Floodplain) is closest to the lake and has an elevation of 0-6 meters above mean sea level (amsl), such that it experiences frequent, intense flooding, with maximum water depth typically ranging from 3 to 7.6 m.^{[13]¹³} *Zone 2* (Upper Floodplain) extends from the Lower Floodplain to 3 km beyond the national roads (National Road 5 along the southern and western edge of the floodplain and National Road 6 along the northern and eastern edge of the floodplain). This zone has an elevation of >6 m amsl and experiences less seasonal flooding than *Zone 1* does, enabling regular rice cultivation and other agricultural activities.^{[14]¹⁴} Both *Zones 1* and *2* contain village settlements. *Zone 3* (Urban) includes urban settlements as defined in the Population Census,^{[15]¹⁵} including provincial capitals and towns located close to national roads. This zone has higher elevation and experiences little or no regular flooding. Overall, the three zones have very different interactions with the Tonle Sap and its annual flood pulse. The flood pulse has greatly impacted the floodplain's functions and

vegetation,[16]¹⁶ and flood characteristics have shaped traditional livelihoods in the area, though recent changes along the Mekong are altering the timing, volume, and sediment loads of annual pulses.

Figure 4: Maps of Mekong Basin and Tonle Sap Floodplain



As depicted in Figure 5 and Figure 6, the project's targeted provinces comprise one of Cambodia's two major rice-growing regions. The other major rice-growing region is in southeastern Cambodia and benefits from much greater access to dry-season irrigation (a critical climate-adaptive technology), largely via the lower Mekong.

Figure 5: Map of Land Cover, 2016[17]¹⁷

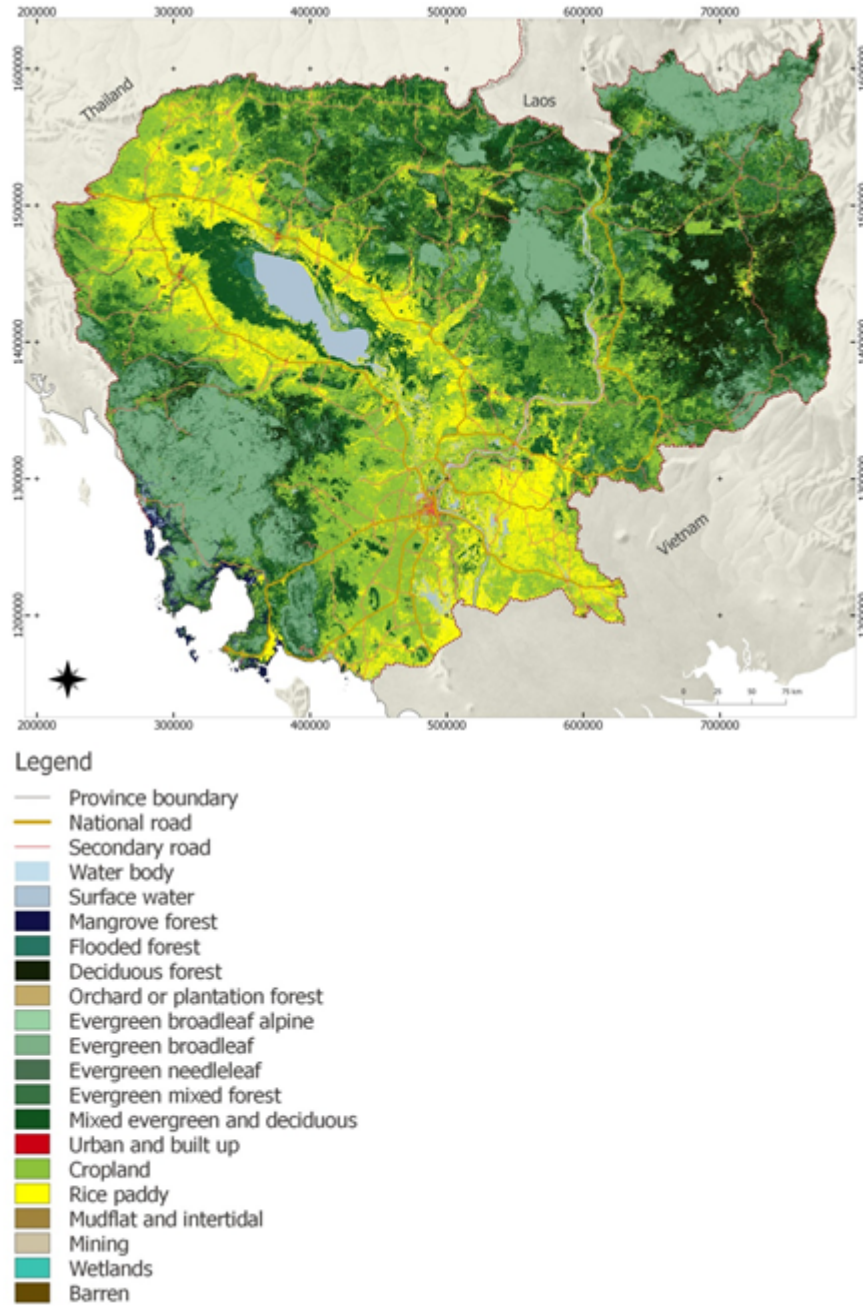
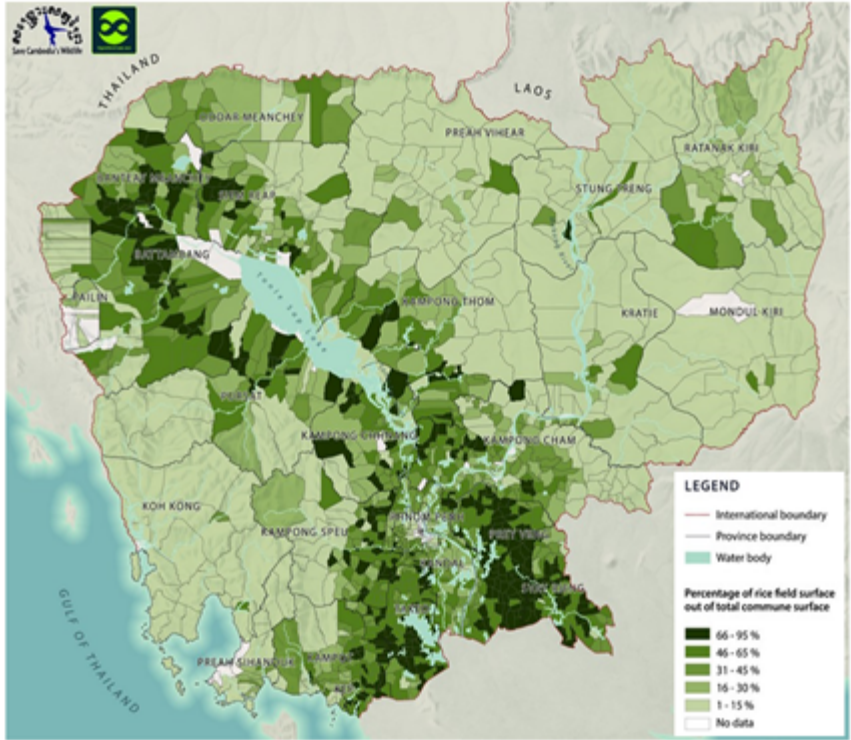


Figure 6: Map of Rice Land Percentage by District[18]¹⁸



The five target provinces Tonle Sap region accounts for about 39% of total harvested rice area in the country; in 2019, this consisted of 1,106,413 ha of wet-season rice and 182,507 ha of dry season rice. Table 1, Table 2, Table 3, Table 4, and Figure 7 present trend and recent rice-production figures by province.

Table 1: Trend in rice production by province, 1983-2019[19]¹⁹

Province	1983	1993	2003	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Banteay Mean Chey		147,000	323,163	549,553	534,386	629,686	633,358	608,412	628,869	699,326	710,720	778,805	954,997	979,281	928,755
Battambang	271,000	217,000	446,559	672,765	703,295	799,605	785,351	881,773	795,611	766,143	861,506	893,032	1,148,939	1,246,361	1,236,781
Kampong Cham	241,800	284,000	484,531	700,662	759,534	769,392	776,108	781,717	780,282	467,823	412,662	494,394	504,015	483,292	466,307
Kampong Chhnang	63,000	80,000	186,336	359,632	378,511	386,680	449,216	503,187	511,458	493,324	545,532	603,076	594,818	590,342	590,342
Kampong Speu	81,000	85,000	181,154	245,942	272,621	300,053	357,613	343,789	357,370	308,818	339,617	347,451	447,223	354,247	340,943
Kampong Thom	127,000	122,000	169,012	435,741	488,823	540,636	549,071	688,400	691,389	725,267	723,228	784,575	862,703	864,845	869,584
Kampot	126,000	115,000	285,966	354,123	398,389	401,454	428,566	437,998	454,245	436,704	470,014	475,082	476,569	493,706	485,813
Kandal	151,000	167,000	304,376	364,300	384,828	387,878	394,323	400,021	398,376	402,895	343,284	370,487	388,917	387,850	358,572
Koh Kong		7,000	10,154	21,949	22,518	21,972	23,679	25,262	26,947	29,031	29,659	27,705	28,225	30,574	26,560
Kratie	28,000	42,000	95,334	112,053	112,434	130,686	136,772	155,236	149,454	148,107	142,090	151,266	157,174	154,700	151,140
Monduliri	6,000	5,000	19,260	29,932	33,166	37,132	37,721	45,782	56,798	54,068	54,289	64,591	70,661	72,977	67,551
Phnom Penh City	6,000	10,000	21,571	18,166	18,131	13,566	35,094	37,537	39,827	36,639	35,964	29,708	31,629	26,422	22,312
Preah Vihear	15,000	29,000	40,906	75,286	93,297	116,978	145,307	162,215	213,758	209,304	229,417	241,596	252,040	253,652	265,920
Prey Veng	280,000	272,000	639,452	994,580	989,576	1,098,332	1,153,782	1,194,432	1,260,911	1,257,545	1,266,426	1,257,633	1,343,094	1,424,163	1,367,920
Pursat		69,000	160,237	239,724	270,534	268,891	311,783	308,422	416,011	386,653	379,162	443,825	452,102	536,206	527,511
Rotanakiri	16,000	15,000	47,052	45,332	46,792	65,858	72,004	66,047	55,510	63,453	52,693	65,285	60,655	60,205	60,702
Siem Reap	162,000	205,000	256,795	413,147	473,801	520,497	544,513	559,231	560,109	551,854	539,486	559,414	559,769	545,888	556,351
Preah Sihanouk Town	13,000	10,000	28,376	31,830	38,050	37,211	38,764	50,235	48,625	46,885	45,689	47,529	46,003	39,079	34,254
Stueng Treng	11,000	16,000	33,950	57,613	61,344	62,628	75,490	73,680	65,483	73,121	74,794	78,742	71,441	71,484	62,005
Svay Rieng	117,000	157,000	314,336	418,143	443,679	469,320	505,499	522,331	539,202	541,620	528,672	562,955	562,144	547,989	566,530
Takeo	204,000	309,000	616,757	875,884	921,692	967,546	1,105,031	1,147,194	1,161,479	1,115,722	1,126,470	1,135,851	1,146,840	1,179,936	1,208,674
Oddar Mean Chey			59,382	104,509	110,299	145,345	163,977	150,876	164,011	151,450	158,925	221,672	213,789	184,873	267,608
Kep			7,390	7,833	9,178	9,608	10,653	11,282	11,414	11,418	11,699	11,810	12,068	12,171	12,367
Pailin			1,274	15,395	23,181	23,896	27,468	25,607	27,302	21,284	15,124	19,088	20,841	21,270	28,523
Tboung Khmum									307,428	290,340	296,839	304,425	311,395	307,209	
Total	1,928,800	2,363,000	4,733,143	7,144,094	7,588,059	8,204,837	8,781,143	9,181,666	9,414,441	9,324,416	9,395,284	9,952,270	10,518,339	10,891,735	10,885,734

Table 2: Rice production in wet season by province 2019[20]²⁰

Province	Early variety (wet season)				Medium maturing variety (wet season)				Late maturing variety (wet season)				Total Wet Season 2019				
	Cultivated areas	harvested areas	Yield	total productio	Cultivated areas	harvested areas	Yield	total productio	Cultivated areas	harvested areas	Yield	total productio	Cultivated areas	harvested areas	Yield	total production	
	ha	ha	t/ha	t	ha	ha	t/ha	t	ha	ha	t/ha	t	ha	ha	t/ha	t	
Banteay Mean Chey	89,437	77,789	4,278	332,780	124,739	113,636	2,480	281,817	27,376	26,232	2,156	56,556	249,449	224,834	3,052	686,185	
Battambang	224,389	217,007	3,658	793,812	92,486	92,144	2,571	236,902	43,945	43,945	2,767	121,596	366,357	358,633	3,250	1,165,563	
Kampong Cham	40,250	40,250	3,441	138,500	29,771	29,771	3,415	101,668	22,721	22,721	3,412	77,524	93,792	93,792	3,419	320,653	
Kampong Chhnang	11,448	11,448	3,440	39,381	72,421	72,421	3,487	252,532	43,562	43,562	3,540	154,209	127,655	127,655	3,499	446,660	
Kampong Speu	6,623	6,623	3,330	22,055	62,374	60,806	3,030	184,242	45,945	44,346	3,000	133,038	114,996	111,829	3,035	339,435	
Kampong Thom	49,325	48,749	2,968	144,687	103,264	102,175	2,536	259,116	65,306	64,109	2,722	174,505	224,890	221,727	2,658	589,329	
Kampot	23,365	23,365	3,328	77,759	71,803	71,803	3,225	231,565	45,031	45,031	3,144	141,577	140,199	140,199	3,216	450,901	
Kandal	14,044	14,044	4,036	56,682	10,785	10,332	2,757	28,485	7,790	7,475	2,509	18,755	32,619	31,851	3,263	103,922	
Koh Kong	2,002	2,002	2,580	5,165	6,723	6,723	2,720	18,287		517	517	2,880	1,489	9,835	9,835	2,701	26,560
Kratie	15,299	14,232	2,875	40,917	17,490	17,120	2,704	46,292		622	622	2,339	1,455	33,571	32,134	2,770	89,010
Monduliri	6,701	6,701	3,305	22,147	12,595	12,595	3,025	38,100	1,922	1,922	2,664	5,120	22,858	22,858	2,931	66,999	
Phnom Penh City	3,727	3,727	2,630	9,802	3,411	3,411	2,740	9,346		746	746	2,861	2,134	7,884	7,884	2,699	21,282
Preah Vihear	19,336	19,336	2,950	57,041	46,028	45,137	2,880	129,995	24,744	23,408	2,989	69,967	93,313	91,086	2,919	265,884	
Prey Veng	102,842	102,842	3,975	408,797	124,153	124,153	2,783	345,518	43,549	43,549	2,871	125,029	270,544	270,544	3,250	879,344	
Pursat	68,303	60,093	4,148	249,266	35,328	35,328	3,148	111,213	19,227	19,227	3,158	60,719	126,813	118,598	3,609	428,027	
Rotanakiri	2,221	2,221	2,522	5,601	11,942	11,392	2,668	30,394	2,152	2,152	2,651	5,705	26,727	26,177	2,319	60,702	
Siem Reap	38,940	36,278	2,526	91,638	98,830	97,980	2,609	255,630	39,800	39,408	2,681	105,653	186,525	182,621	2,610	476,626	
Preah Sihanouk Town	200	200	2,960	592	8,476	8,436	3,060	25,814	1,962	1,962	4,000	7,848	10,638	10,598	3,232	34,254	
Stueng Treng	10,481	9,087	2,500	22,718	13,308	12,085	2,450	29,608	1,183	1,183	3,000	3,549	27,424	24,807	2,499	62,005	
Svay Rieng	53,107	53,107	3,620	192,247	110,665	110,422	2,466	272,301	6,048	6,048	2,570	15,543	169,820	169,577	2,831	480,091	
Takeo	93,482	93,482	3,543	331,209	109,227	109,227	3,272	357,400	6,664	6,664	3,431	22,864	209,373	209,373	3,398	711,473	
Oddar Mean Chey	2,450	2,450	1,730	4,239	87,277	87,277	2,743	239,383	4,392	4,392	3,450	15,152	95,784	95,784	2,737	262,121	
Kep	1,019	1,019	3,471	3,537	1,677	1,677	3,346	5,611		936	936	3,361	3,146	3,632	3,632	3,385	12,294
Pailin		300	2,880	864	6,300	6,300	3,200	20,160	1,500	1,500	3,250	4,875	8,100	8,100	3,197	25,899	
Tboung Khmum	11,390	11,052	3,545	39,179	34,600	34,495	3,448	118,938	32,550	31,971	3,320	106,144	78,540	77,518	3,409	264,261	
Total	890,681	887,404	3,605	3,090,615	1,295,673	1,276,846	2,843	3,630,317	490,190	483,628	2,965	1,434,152	2,731,338	2,671,646	3,095	8,269,480	
Previous year	866,259	842,720	3,640	3,067,382	1,277,503	1,236,191	2,848	3,517,707	538,527	522,628	2,891	1,510,924	2,739,446	2,654,314	3,094	8,212,893	
Compared	24,422	14,684	0,035	23,233	18,170	41,655	0,005	112,610	48,337	39,000	0,074	76,772	8,108	17,332	0,001	56,587	

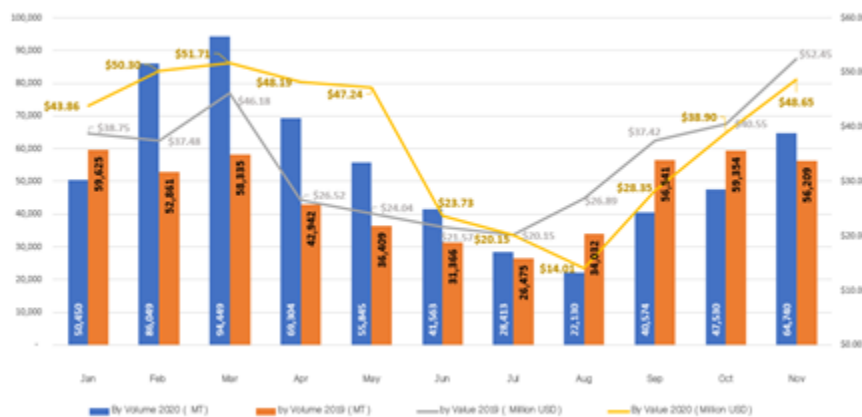
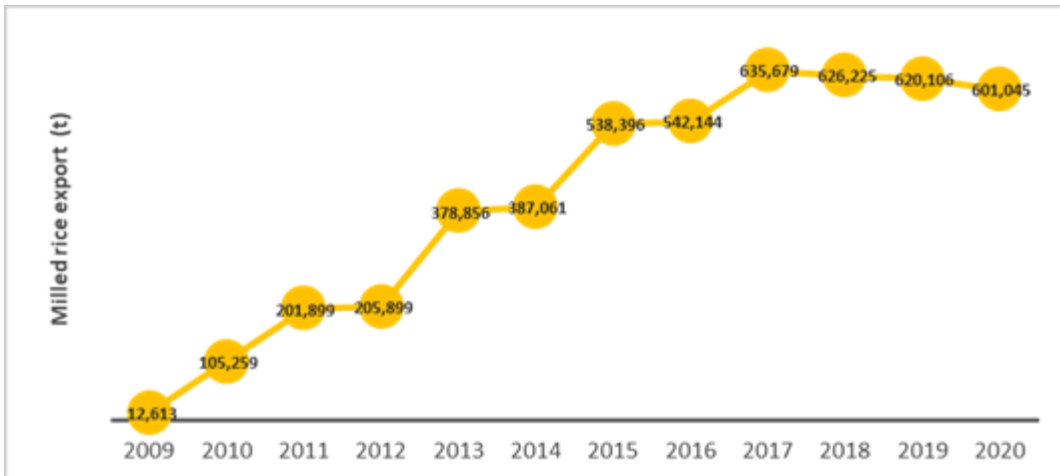
Table 3: Total rice production by season by province, 2019 ? 2020[21]²¹

Province	Total Wet Season 2019				Total Dry season 2019-2020				Total rice production 2019-2020			
	Cultivated areas	harvested areas	Yield	total production	Cultivate d areas	harvested areas	Yield	total production	Cultivated areas	harvested areas	Yield	total production
	ha	ha	t/ha	t	ha	ha	t/ha	t	ha	ha	t/ha	t
Banteay Mean Chey	249,449	224,834	3.052	686,185	55,067	55,067	4.405	242,570	304,516	279,901	3.318	928,755
Battambang	366,357	358,633	3.250	1,165,563	17,244	17,244	4.130	71,218	383,601	375,877	3.290	1,236,781
Kampong Cham	93,792	93,792	3.419	320,653	42,706	42,325	4.150	175,654	136,498	136,117	3.646	496,307
Kampong Chhnang	127,655	127,655	3.499	446,660	41,712	41,652	4.650	193,682	169,367	169,307	3.782	640,342
Kampong Speu	114,996	111,829	3.035	339,435	450	450	3.351	1,508	115,446	112,279	3.037	340,943
Kampong Thom	224,890	221,727	2.658	589,329	65,455	65,235	4.296	280,255	290,345	286,962	3.030	869,584
Kampot	140,199	140,199	3.216	450,901	8,515	8,515	4.100	34,912	148,714	148,714	3.267	485,813
Kandal	32,619	31,851	3.263	103,922	57,600	57,600	4.421	254,650	90,219	89,451	4.009	358,572
Koh Kong	9,835	9,835	2.701	26,560	-	-	-	-	9,835	9,835	2.701	26,560
Kratie	33,571	32,134	2.770	89,010	14,143	14,143	4.393	62,130	47,714	46,277	3.266	151,140
Mondulkiri	22,858	22,858	2.931	66,999	130	130	4.246	552	22,988	22,988	2.939	67,551
Phnom Penh City	7,884	7,884	2.699	21,282	450	450	3.400	1,530	8,334	8,334	2.737	22,812
Preah Vihear	93,313	91,086	2.919	265,884	12	12	3.000	36	93,325	91,098	2.919	265,920
Prey Veng	270,544	270,544	3.250	879,344	111,040	111,040	4.400	488,576	381,584	381,584	3.585	1,367,920
Pursat	126,813	118,598	3.609	428,027	26,912	22,376	4.446	99,484	153,725	140,974	3.742	527,511
Rotanakiri	26,727	26,177	2.319	60,702	-	-	-	-	26,727	26,177	2.319	60,702
Siem Reap	186,525	182,621	2.610	476,626	22,585	22,585	3.530	79,725	209,110	205,206	2.711	556,351
Preah Sihanouk Town	10,638	10,598	3.232	34,254	-	-	-	-	10,638	10,598	3.232	34,254
Stueng Treng	27,424	24,807	2.499	62,005	-	-	-	-	27,424	24,807	2.499	62,005
Svay Rieng	169,820	169,577	2.831	480,091	20,102	20,102	4.300	86,439	189,922	189,679	2.987	566,530
Takeo	209,373	209,373	3.398	711,473	101,511	101,511	4.898	497,201	310,884	310,884	3.888	1,208,674
Otdar Mean Chey	95,784	95,784	2.737	262,121	139	139	3.504	487	95,923	95,923	2.738	262,608
Kep	3,632	3,632	3.385	12,294	20	20	3.650	73	3,652	3,652	3.386	12,367
Pailin	8,100	8,100	3.197	25,899	795	795	3.301	2,624	8,895	8,895	3.207	28,523
Tbaung Khmom	78,540	77,518	3.409	264,261	10,920	10,737	4.000	42,948	89,460	88,255	3.481	307,209
Total	2,731,338	2,671,646	3.095	8,269,480	597,508	592,128	4.418	2,616,253	3,328,846	3,263,774	3.335	10,885,733
Previous year	2,739,446	2,654,314	3.094	8,212,893	596,483	593,747	4.512	2,678,842	3,335,929	3,248,061	3.353	10,891,735
Compared	8,108	17,332	0.001	56,587	1,025	1,619	0.093	62,589	7,083	15,713	0.018	6,002

Table 4: Rice cultivated areas affected by drought, flood, pest and disease by province, 2019 ? 2020^[22]

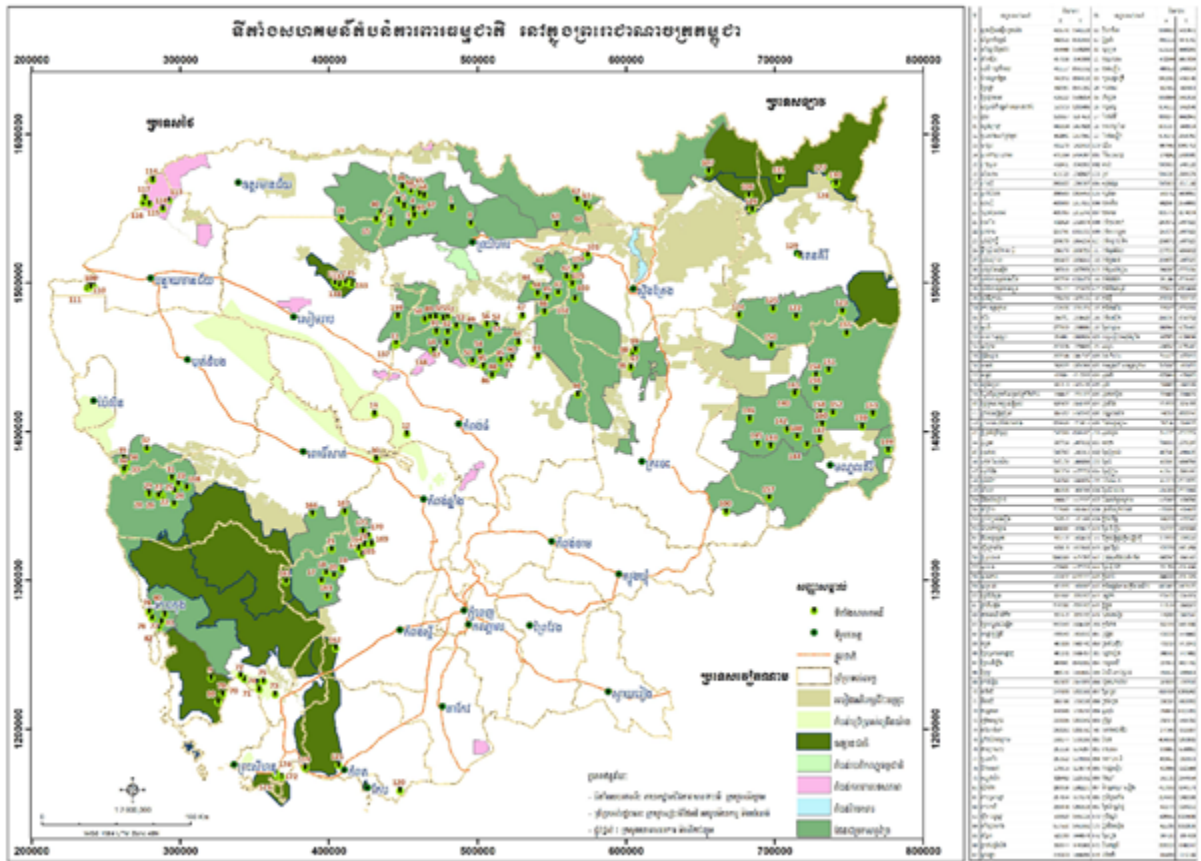
Province	Cultivated areas (ha)	Drought	Insect	Flood	Total	Drought	Insect	Flood	Total	Replanting areas/recovered	100% destruction
Banteay Mean Chey	249,449	67,681	-	25,635	93,316	21,508	-	5,505	27,013	2,398	24,615
Battambang	366,357	104,718	-	2,296	107,014	28,960	-	2,296	31,256	23,532	7,724
Kampong Cham	93,792	-	-	5,209	5,209	-	-	1,054	1,054	1,054	-
Kampong Chhnang	127,655	266	-	-	266	-	-	-	-	-	-
Kampong Speu	114,996	3,985	-	-	3,985	3,167	-	-	3,167	-	3,167
Kampong Thom	224,890	15,957	-	6,703	22,660	1,155	-	2,958	4,113	950	3,163
Kampot	140,199	-	-	-	-	-	-	-	-	-	-
Kandal	32,619	2,246	-	1,200	3,446	768	-	-	768	-	768
Koh Kong	9,835	-	10	-	10	-	-	-	-	-	-
Kratie	33,571	-	-	5,947	5,947	-	-	4,456	4,456	3,019	1,437
Mondulkin	22,858	223	-	-	223	-	-	-	-	-	-
Phnom Penh City	7,884	525	-	-	525	-	-	-	-	-	-
Preah Vihear	93,313	4,610	-	4,717	9,327	423	-	2,227	2,650	423	2,227
Prey Veng	270,544	16,211	-	11,277	27,488	375	-	1,356	1,731	1,731	-
Pursat	126,813	62,381	-	-	62,381	8,527	-	-	8,527	312	8,215
Rotanakiri	26,727	-	-	2,639	2,639	-	-	550	550	-	550
Siem Reap	186,525	36,410	30	3,980	40,420	4,657	-	547	5,204	1,300	3,904
Preah Sihanouk Town	10,638	-	6	1,886	1,892	-	6	34	40	-	40
Stueng Treng	27,424	-	-	5,808	5,808	-	-	2,617	2,617	-	2,617
Svay Rieng	169,820	2,888	-	510	3,398	823	-	32	855	612	243
Takeo	209,373	185	-	-	185	-	-	-	-	-	-
Otdar Mean Chey	95,784	-	-	-	-	-	-	-	-	-	-
Kep	3,632	-	-	7	7	-	-	-	-	-	-
Pailin	8,100	-	-	-	-	-	-	-	-	-	-
Tbaung Khmom	78,540	6,894	-	2,596	9,490	1,111	-	1,922	3,033	2,011	1,022
Total	2,731,338	325,180	46	80,410	405,636	71,474	6	25,554	97,034	37,342	59,692

Figure 7: Milled rice export 2009 ? 2020 and export by month during 2020^[23]



The project’s targeted areas also contain numerous Community Protected Areas (CPAs), which are officially designated areas that allow local communities to conduct planned and approved activities, including some agricultural practices, within nationally designated protected areas. Figure 7 depicts a map of early CPAs, though the number and extent of CPAs has expanded in recent years. Protected Areas fall under the purview of the Ministry of Environment (MoE), which administers CPAs via the General Directorate of Local Community (GDLC). Thus, supporting agricultural practices within CPAs requires coordination between GDLC and the Ministry of Agriculture, Forestry, and Fisheries (MAFF), particularly via the General Directorate for Agriculture (GDA) and provincial and district counterparts (e.g., Provincial Departments of Agriculture, Forestry, and Fisheries?PDAFFs). CPAs provide an important means for landless and poor households to access land for agricultural production. CPAs are also often utilized by indigenous ethnic minority communities (see Annex J).

Figure 8: Community Protected Areas (CPAs, pins indicating locations of CPAs)[24]²⁴



Climate-related Risks and Vulnerabilities

This section describes climate-related risks and vulnerabilities in the Tonle Sap region. As a preface to this section, it is important to note that climate-related adaptations can be categorized as (a) threat-specific or (b) general. That is, climate adaptability can be assessed and addressed in terms of threat-specific forecasts (e.g., rainy season shortened by 21 days by 2050; nightly low temperature during growing season increased by 1.5° C by 2080) or in terms of uncertainty (i.e., identifying ‘no-regrets’ approaches that yield benefits no matter the trajectory or year-to-year variance). The following section primarily focuses on threat-specific exposure, sensitivity, and adaptive capacities. The project’s proposed approach (see Section 1.a.2) builds on these threat-specific considerations to prioritize initiatives that cover both (a) anticipated climatic trajectories and (b) unanticipated risks (i.e., ‘no-regrets’ approaches that are likely to yield benefits across a wide range of scenarios and high annual variance).

Climate-related vulnerabilities. *Vulnerability* to climate change is a function of *exposure* and *sensitivity*. *Exposure* is the probability of experiencing a given climatic hazard (e.g., low rainfall, high

temperatures), whereas *sensitivity* is the degree to which such hazards result in harms (in terms of extent, severity, or duration).

Exposure. The first major on-going and forecast climatic trend for the Tonle Sap region (and Cambodia more broadly) is that **the rainy season is predicted to have a later onset, shorter duration, and more intense rainfall events.**^{[25]²⁵} This trend is already resulting in significant harms to farmers in the Tonle Tap basin. The later onset of the rainy season means that farmers following traditional cropping calendars often plant too soon, such that sown fields do not receive sufficient rainfall to survive. This trend is often accompanied by false starts to the rainy season, such that even if farmers wait for the first rain to sow, the actual rainy season does not begin for a few more weeks, such that the sown seeds fail to germinate or die shortly after sprouting. Farmers following traditional cropping calendars might sow prior to the first rain, but a false start to the rainy season is sufficient merely to germinate the seeds, and the sprouts then die from insufficient rainfall.

Box 1: Precipitation Anomalies, 2019

Cambodian farmers face increasing unpredictability in rainfall, a critical factor in agricultural livelihoods. For example, throughout 2019, Cambodian farmers experienced rainfall levels significantly below and significantly above historical long-term averages (LTA).

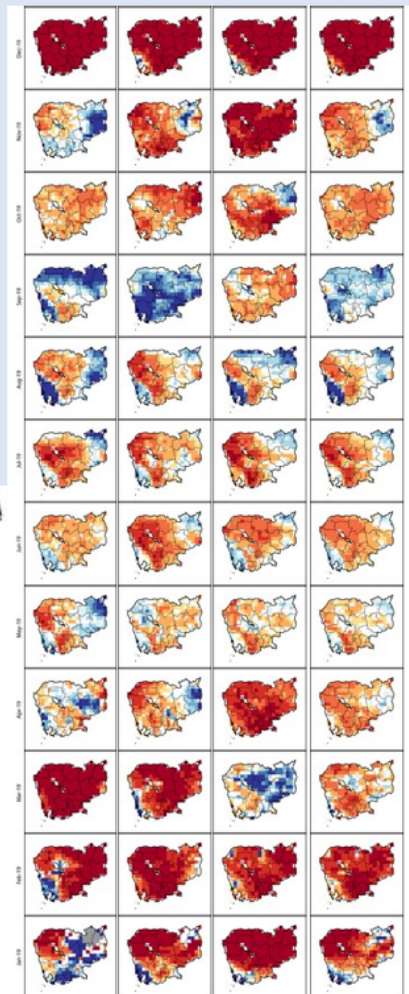
In the image to the right, the top row is December 2019; the bottom row is January 2019. From left to right, the columns are anomalies for the first, second, and third dekads of the month, followed by the overall monthly anomaly.

In a normal year, the maps would be white, light red, and light blue. The prevalence of dark red (drought) and dark blue (heavy rainfall) reflect very large discrepancies from long-term climate patterns—often differing by over 60%--leading to very high levels of stress for crops and farmers.

Unfortunately, precipitation anomalies such as these are forecast to continue and worsen in the years ahead.

Source: FAO GIEWS

Difference to LTA



Ideally, the rainy season would have a predictable start date and duration, and rainfall events would have a frequency and volumes to ensure that fields rarely go more than a few days without standing water (which is important for weed suppression), the water table rarely drops below about 10 cm (ensuring sufficient water in the root zone for vigorous growth), and fields never receive enough water to breach paddy berms (resulting in erosion, crop damage from sheet flow or excessive inundation, etc.). However, the forecast trend will entail less predictability and more heavy-rainfall events, such that crops will go longer periods of time without rainfall, which result in crop stress and top-layer soil-crusting that reduces infiltration (increases run-off) when rain eventually falls. Heavy rainfall events then result in **crop losses from excessive inundation, breached paddy berms, erosion, crop damage from sheet flow, etc.**

Box 2: A Farmer's Perspective on Unpredictable Rainfall

Rainfall was very favorable in the last 10 to 15 years compared to today. One could know when to start their crops so that they have enough water for their plants. At that time, even we cultivate small land, we could harvest a lot. Today, the rainfall is very unpredictable; we would rather farm larger land sizes and harvest little. We are now struggling hard. Many years ago, things were better. We knew when the rain would start or end, but now, nobody knows. It keeps changing from year to year. Things just don't happen as they used to. It's hard to understand why.

Source: Feedback from participatory consultations during vulnerability assessments for:

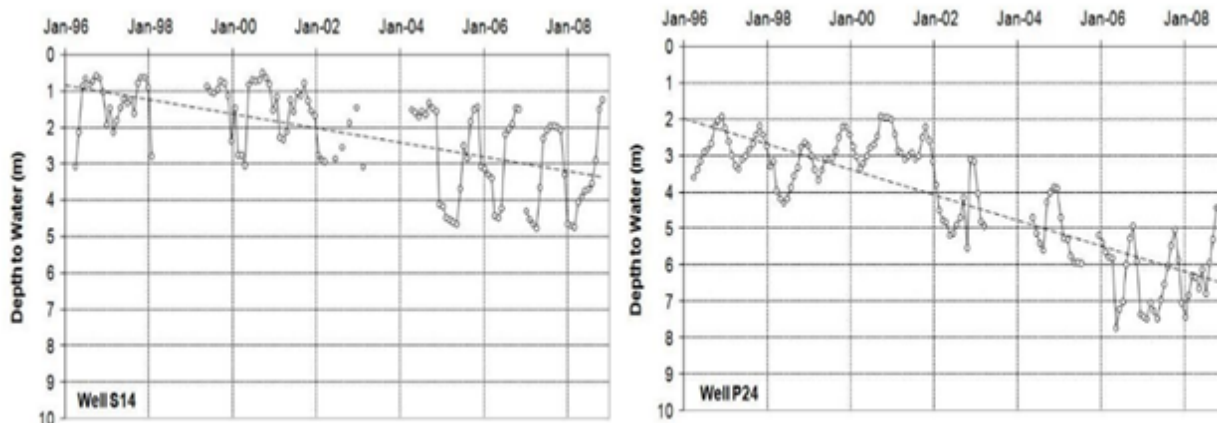
G. Oudry, K. Pak, C. Chea. *Assessing Vulnerabilities and Responses to Environmental Changes in Cambodia*. International Organization for Migration, Phnom Penh, 2016.

https://environmentalmigration.iom.int/sites/default/files/publications/MECC_Cambodia%20report.pdf

Together, the later onset of the rainy season and increased proportion of precipitation via heavy rainfall events mean that the region will experience **more drought conditions both between and within rainy seasons** (projected increase of 0.5 months of drought per year by 2050). A 2016 household survey in four out of the five targeted provinces showed that all participating rice-farming households had experienced at least one drought and one flood event in the five years prior to the survey.^[26]²⁶ The increased incidence of droughts is already increasingly straining the conjunctive uses of limited water resources, including for basic residential consumption (drinking, hygiene, cooking, home gardens), agriculture (irrigation, livestock, fish ponds, market gardens), industry, ecological flows, etc. There is already very high and increasing demand for pumped wells, village/ household ponds and tanks, etc. Less predictable rainfall—especially when combined with higher evaporative losses—leads to more social friction from competing uses of a scarce, critical resource. Moreover, even when total rainfall is sufficient, patterns matter: deluges have reduced infiltration rates (i.e., reduced groundwater recharge due to increased run-off because of soil crusts, saturation, etc.) and can exceed storage capacities.

Droughts also result in additional strains on groundwater resources, which are used for drinking water, for horticulture, and increasingly for supplemental irrigation. Although groundwater governance data are sparse for Cambodia, Figure 9 depicts trends in falling groundwater levels of 20–35 cm per year.

Figure 9: Groundwater Levels in Typical Wells in Prey Veng and Svay Rieng, 1996–2008^[27]²⁷

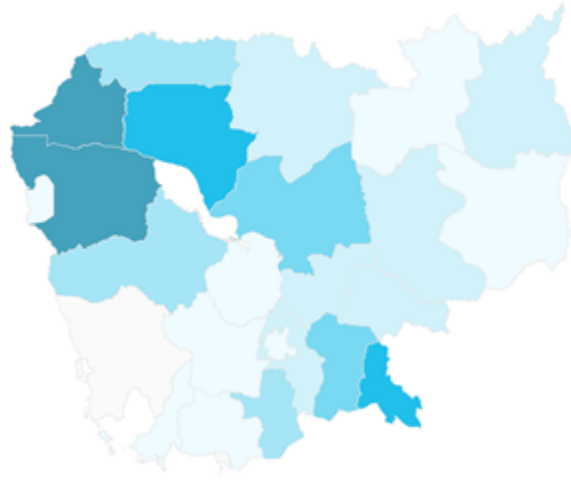


Cambodian farmers now face the seemingly paradoxical tragedy of repeatedly enduring floods and droughts. Cambodia experienced severe floods in 2011, 2013, and 2014, and severe droughts in 2004, 2012, 2014, 2015, 2016, and 2019.[28]²⁸ The 2012 drought affected 11 out of the 24 provinces and negatively affected tens of thousands of hectares of rice-growing areas.[29]²⁹ In October 2013, heavy rainfall resulted in flash floods, which seriously affected over half a million people living in rural communities. More than half of Cambodia's provinces were affected, particularly in the Mekong region. An assessment indicated that the damage and loss caused by the 2013 floods amounted to USD 356 million, including USD 153 million in damage to physical assets and USD 203 million in losses in production and economic flows. During the 2015-2016 dry season, there was a severe drought attributed to the El Niño phenomenon,[30]³⁰ resulting in one of the worst droughts for Southeast Asia in decades. It affected 2.4 million people across 18 provinces in Cambodia. The 2019 drought[31]³¹ affected about 330,000 ha of rice-cultivated areas.

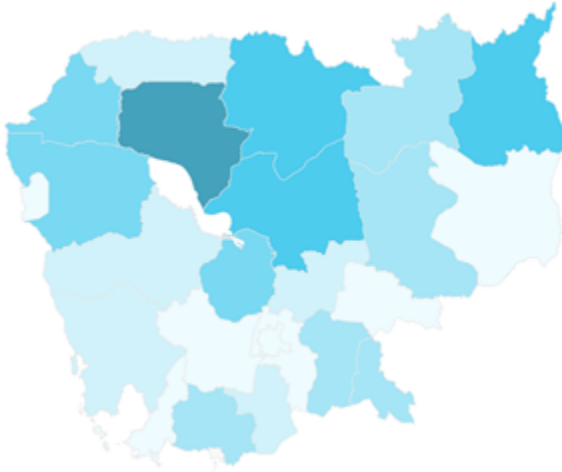
Additionally, heavy rainfall events are often a function of increased air temperatures, which allow greater atmospheric storage of water vapor, which has a very high specific heat (i.e., capacity to store energy). Consequently, heavy rainfall events are often accompanied by significant atmospheric energy gradients (weather fronts) that produce **strong storms**, which damage crops. Over the past decade, Cambodia has witnessed more frequent and severe floods, droughts, and windstorms, which have resulted in increasingly high physical and economic impacts, particularly in rural areas.[32]³²

Figure 10: Provincial Proportions of Communes at High Risk of Climatic Hazards[33]³³

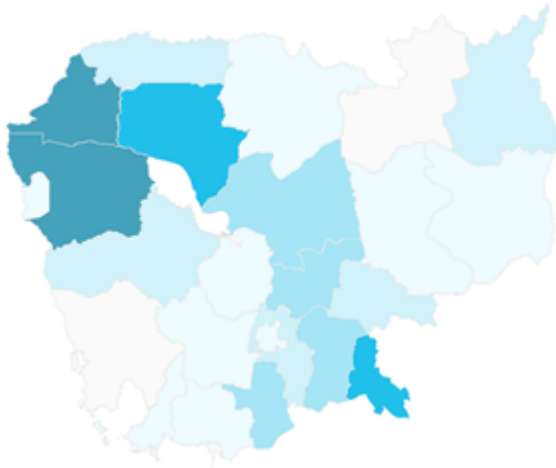
Composite Risk



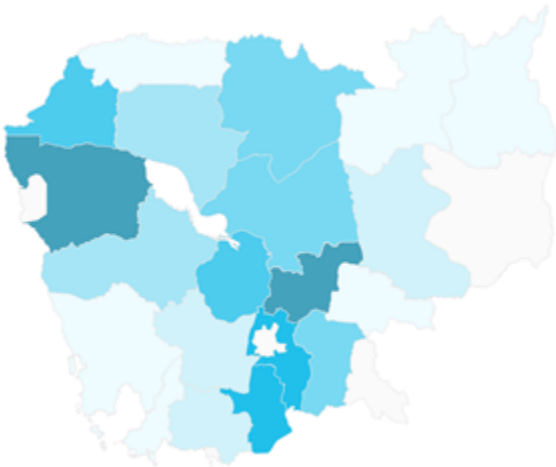
Drought Risk



Flood Risk



Storm Risk

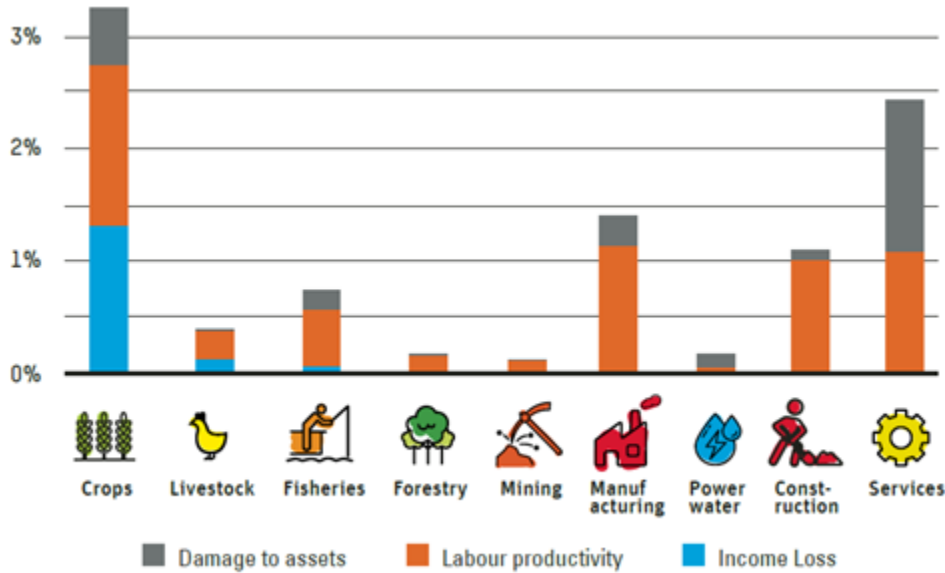


The second major on-going and forecast climatic trend for the Tonle Sap region is higher temperatures, particularly for night-time lows in the rainy (growing) season and day-time highs in the dry season. This on-going and predicted trend will likely have implications for agricultural yields (e.g., reduced soil moisture, reduced plant productivity) and labor (availability, cost, and productivity). For example, an increase of 1? C in night-time low temperatures during the rice-growing season results in a decreased rice yield of approximately 10%.^{[34]³⁴, [35]³⁵}

Additionally, increased day-time temperatures reduce labor productivity and availability (thereby significantly increasing labor costs and shortages). Climate forecasts suggest that agriculture will suffer the greatest economic impacts of climate change in Cambodia, particularly due to losses of

income and labor productivity associated with crop production (see Figure 11). Even under the relatively optimistic RCP 4.5 scenario, Cambodia is expected to experience an overall drop of 9.8% in GDP per capita between 2015 and 2050.[36]³⁶

Figure 11: Expected Economic Impacts of Climate Change in Cambodia by Sector and Type of Impact (% decrement in GDP by 2050)



Source:

UNDP (2018)

Increased temperatures and shifting seasons also shift the ranges of **pests and diseases**. In Cambodia, rice losses due to infestations of stem-borers and leaf-folders have risen sharply over the past several years. In order to combat the increased ranges and prevalences of pests and diseases, farmers are likely to increase use of chemical inputs, thereby continuing a trend of increased costs of production and negative ecological consequences.

Finally, it should be noted that the constellation of climatic threats facing farmers in the Tonle Sap plain is not merely a matter of acute shocks, but also of trends that will increasingly threaten the agricultural productivity of the region, potentially requiring more profound social and economic

transitions. For example, Cambodia is expected to lose 20% of land suitable for rain-fed rice cultivation by 2050.[37]³⁷

Sensitivity. Farming communities in the Tonle Sap basin are especially sensitive to these climatic trends for several reasons. First, **these communities rely very heavily on agriculture for sustenance and livelihoods** (yields and wage labor). Thus, climatic shocks typically directly result in harms to livelihoods and well-being (e.g., reduced production income, reduced wage income, food insecurity, reduced labor productivity). The agricultural sector—especially rice farming—is most impacted by climatic hazards; about 90% of economic losses from extreme weather events are due to crop-losses.[38]³⁸ During the 2015-2016 El Niño, 37% of households reported water shortages, 62% of households reported lost income (average loss of 19%), and household production of paddy and cassava declined 22%.[39]³⁹ These sensitivities are particularly acute for rain-fed production, which accounts for about 80% of rice production in the Tonle Sap region. Not only are rain-fed production systems especially sensitive to variability in precipitation and temperature (evaporative losses), but they are also susceptible to flooding, given that rain-fed fields lack the drainage and pumping systems of irrigated fields.

Second, **agricultural systems in these communities and districts are very poorly suited to recent and forecast climatic trends.** For example, nearly all districts have very low levels of economic diversification, including very little diversification of rice varieties (let alone diversity of crops or sectors). Therefore, climate-related shocks often have widespread effects. Moreover, the most commonly grown rice varieties are selected based either on local consumption preferences (traditional local varieties) or preferences of large-scale buyers, not based on tolerances to climate-related stresses. For example, most common varieties are photo-sensitive (i.e., require a long growing period), meaning that they are susceptible to climate-related risks for longer periods of time. Commonly grown varieties are also not especially tolerant of droughts or floods. These variety-based sensitivities to climatic risks are greater for extensive producers (generally poorer smallholders), who are generally more reluctant to adopt new varieties and have less access to seeds (especially good quality seeds), technical assistance, infrastructure, and marketing[40]⁴⁰ for adoption.

Additionally, these systems are highly sensitive to climate change because yields are comparatively low, particularly in rain-fed production, which is practiced by more than 80% of rice-growing

households. Low yields and small land holdings mean that even relatively small climatic shocks can have significant consequences. [41]⁴¹

Third, these communities have **very limited resources with which to absorb shocks**. They have weak *economic* shock absorbers due to high levels of poverty (see Figure 12), high household indebtedness (along with high costs of credit), and limited household assets, including landlessness and limited land holdings (see Figure 13). Climatic shocks such as droughts and floods typically have a direct and significant impact on household incomes and food security, particularly for poor households.[42]⁴²

Figure 12: Map of Poor Populations by District, 2014 - 2016[43]⁴³

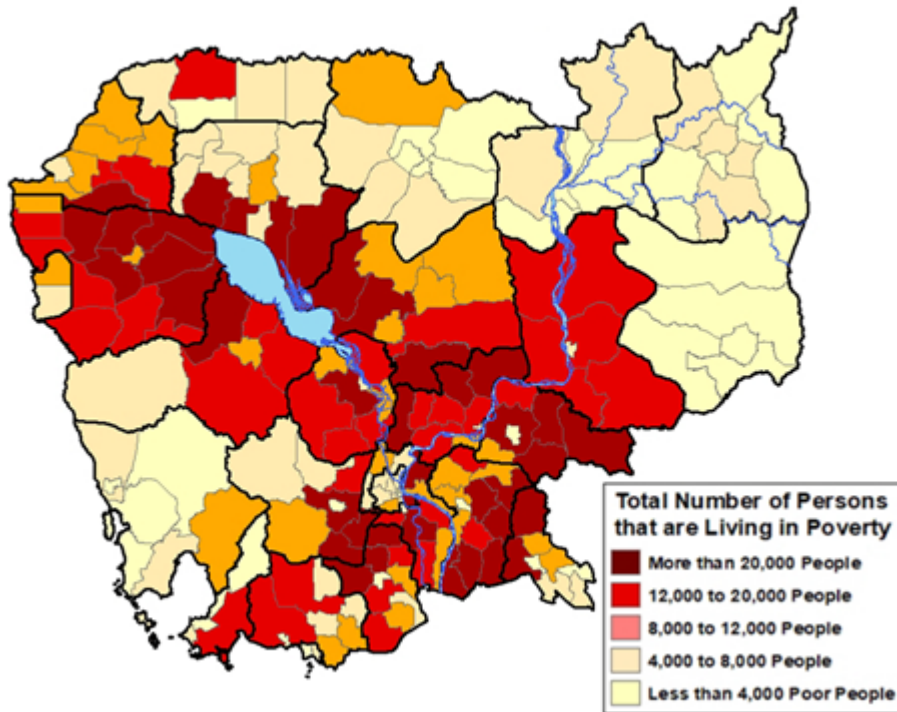


Figure 13: Percentage of Households with < 1 Hectare of Rice Land by District[44]⁴⁴

(*Houbaropsis bengalensis*), which in Southeast Asia is restricted to the Tonle Sap region. In addition, stubble fields during the high water season make structurally poor habitat for the fish on which many communities depend.

In fact, given that these communities' economic and social shock absorbers are already strained, many shocks are transmitted to the environment, leading to degradation of biophysical capital. For example, increased climate-related threats have led many farmers to increase their reliance on inputs—e.g., synthetic chemical inputs—often in ways that produce limited benefits for yields. In the last decade, Cambodia's importation of pesticides increased by a factor of 285, and the national use of pesticides rose from 200,000 liters in 2002 to 3.4 million liters in 2004.^[46]⁴⁶ This trend continues; Cambodia formally imported 13,800 tons more pesticides in 2016 than in 2015,^[47]⁴⁷ and in a 2016 survey, 100% of farmers surveyed from five provinces in Cambodia applied some amount of pesticide in each season.^[48]⁴⁸ Cambodia is seen as a "dumping ground for unwanted and dangerous pesticides."^[49]⁴⁹ In 2016, there were 522 trade names (for 133 common names) of chemical pesticides available in local markets, most of them unregistered.^[50]⁵⁰ The pesticides are often used incorrectly due to lack of labelling in Khmer and insufficient extension services at the village level, thereby reducing the products' effectiveness and increasing negative environmental impacts (particularly water and soil contamination) from over-use and incorrect disposal.^[51]⁵¹ Thus, current and forecast climatic changes pose risks not just to livelihoods, but also to local ecosystems, the degradation of which further threatens these communities' livelihoods and well-being.

Although most communities have strong social capital, their *social* shock absorbers are weakened by the aforementioned lack of diversification, such that if one household is experiencing agricultural hardships, most other households in the community are likely experiencing the same hardships and are unable to offer much support. Similarly, institutional support (e.g., technical support from agricultural extension services, financial support from banks, etc.) is strained when such hardships are simultaneous and widespread.

Adaptive capacities. Whereas absorptive capacities (discussed above with respect to sensitivities) enable systems to incur and endure shocks without needing to alter the system, *adaptive capacities* are the abilities to reduce vulnerability (exposure and sensitivity). Simply put, whereas absorptive capacity is a function of the status of exposure and sensitivity, adaptive capacity is the ability of a system to manage risks. In extreme circumstances, adaptation requires a transition or transformation to a new normal (e.g., shifting to a different system of agriculture or away from agriculture completely) rather than mere resilience (recovering to a version of pre-shock conditions).

Adaptive capacities can be conceptualized in many ways and often include considerations of complex, context-specific factors. RGC has yet to adopt a formal framework of indicators for adaptive capacities. However, from a decision-process perspective, adaptive capacities can be organized into strategic, technical, and operational functions, which can each be considered at multiple levels (e.g., national, communal, household, sectoral, etc.). As noted above, adaptive capacities can also be considered in terms of (a) preparedness to cope with forecast trends and (b) agility to cope with unforeseen hazards.

The *strategic* function corresponds to an awareness and prioritization of climate-related issues, and establishment of legal and institutional arrangements that facilitate good governance. The *technical* function corresponds to the decision-making frameworks (e.g., monitoring and data protocols), coordination, and planning. The *operational* function corresponds to the various resources to execute the strategic direction and technical plans (e.g., infrastructure, equipment, monitoring stations, broadcast networks, funding, personnel, etc.).

Cambodia's strongest climate-related adaptive capacities are national, strategic, and threat-specific. National agencies have been established with relevant mandates, national strategic plans and action plans have been established, and RGC has engaged with relevant multi-lateral partnerships. However, adaptive capacities significantly weaken the further one moves from (a) the national level to the household level, (b) strategic to operational functions, and (c) threat-specific coping to general agility.

That is, Cambodia has laid a strategic, national foundation for adaptive capacities, but those capacities need substantial strengthening at sub-national levels and for technical and operational functions. Technically, several coordination mechanisms have been established with varying levels of effectiveness, though alignment with funding, mandates, and subnational institutional structures continues to be a challenge. Operationally, the mechanisms to translate strategic priorities into on-the-ground actions are tenuous. At the household level, adaptive capacities benefit from some awareness

of current and forecast climatic trends, but suffer from a lack of awareness of coping strategies, knowledge of relevant decision processes, access to fit-for-purpose information, and access to relevant resources, such as sufficient access to seeds for climate-resilient marketable rice varieties and affordable credit. Communities also lack frameworks for effective local governance of natural resources (especially water), technical assistance, localized agro-meteorological forecasts, ready options for forecast-based crop-switching, localized plans and resources for unanticipated shocks, etc. The increasing unreliability of seasonal weather patterns means farmers are less able to rely on traditional practices and need more accurate information, in terms of near-term weather forecasts, seasonal forecasts, and longer-term climatic trends.

Key Barriers

The key barriers to build climate resilience into the livelihoods of Cambodia's rice-based communities in the target provinces include the following:

Barrier 1: Inadequate enabling environment for climate change adaptation in the agricultural sector, particularly for rice production.

Currently, MAFF lacks sufficient capacities to integrate climate change actions fully and effectively into annual budgets and workplans, as well as to integrate agricultural priorities into climate-related strategies, processes, and policies. Similarly, national and subnational institutions in the agricultural sector lack sufficient capacities for climate-related planning and implementation, such as provincial capacities for integrating CCA-relevant data into decision processes (e.g., agro-meteorological data).

Additionally, although cross-ministerial and inter-sectoral coordination mechanisms exist (e.g., the Cambodia Climate Change Alliance, CCCA; NCSDD's Technical Working Group on Climate Change, CCTWG; Technical Working Group on Agriculture and Water, TWG-AW), such mechanisms require on-going external support in order to maintain momentum and engagement as RGC transitions to long-term institutional and funding arrangements to support these mechanisms. One of the continuing challenges of effective inter-ministerial and inter-sectoral coordination on climate change adaptation is defining and ensuring alignment of locally and sectorally appropriate CCA operationalizations, metrics, collection protocols, data-sharing, etc. Whereas the more global nature of climate-change mitigation (CCM) challenges lend themselves to more internationally consistent transparency and accountability frameworks, CCA challenges and opportunities are far more locally and contextually specific. At present, RGC has yet to formalize CCA metrics for the agricultural sector or to link sectoral indicators to the production-oriented agricultural indicators in the National Strategic Development Plan (NSDP)

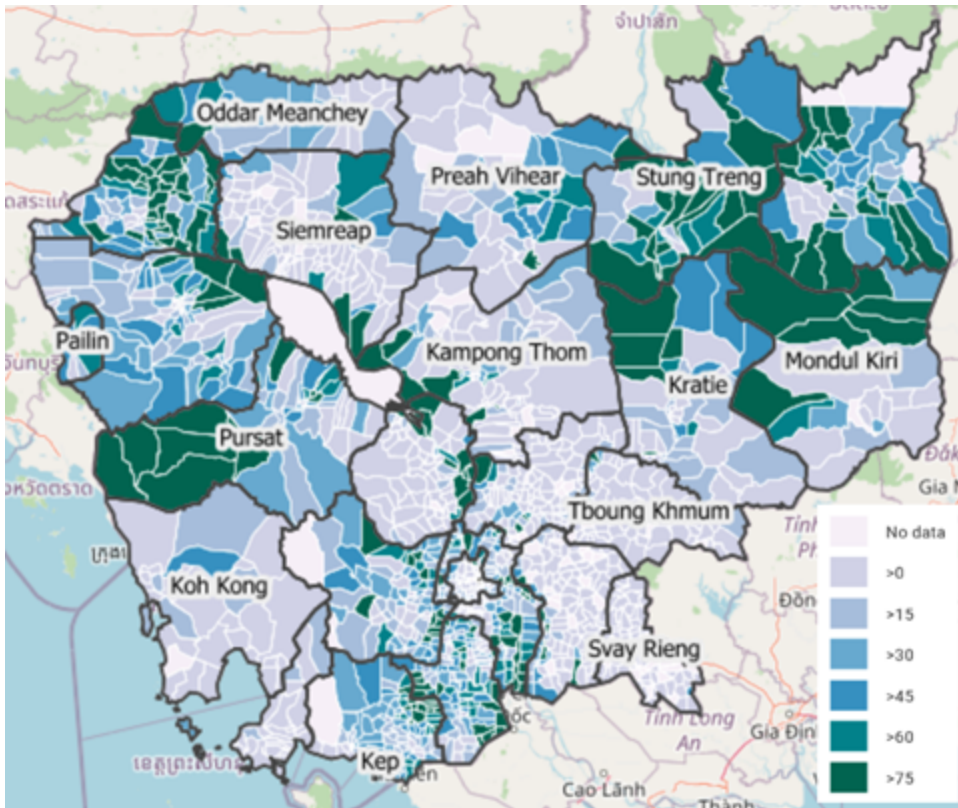
or Cambodia's Sustainable Development Goals (CSDGs). Additionally, metrics in the agricultural sector do not adequately reflect national priorities related to gender and vulnerable groups. Moreover, the agricultural dimension is so far missing from CCCA's recently initiated work on an online tracking system for RGC's Nationally Determined Contribution (NDC), which is part of an effort to enable a coherent and coordinated view of RGC's climate-related initiatives (both for mitigation and adaptation) as well as linkages between the NDC and the Sustainable Development Goals (SDGs).

MAFF also lacks sufficient data on climate vulnerabilities of rice-growing communities in the Tonle Sap region, particularly in a form that integrates with climate modelling of trends in the area's agro-ecological zones. MAFF and MoE also currently lack the sub-national technical capacities to interpret and incorporate such information into provincial and district-level contexts and approaches (e.g., via PDAFFs, PDoEs), or to provide relevant bottom-up insights?e.g., from integration with Commune Investment/ Development Plans (CIPs/ CDPs).

There is also weak policy and regulatory alignment with respect to the mainstreaming of climate-adaptive approaches, such as natural resource governance. This is especially pronounced with respect to water-resource management. Particularly during the dry season, lack of water access significantly limits agricultural production. Farmers who can afford wells and pumps increasingly rely on them to enable dry-season production. The area irrigated by groundwater in Cambodia is increasing by more than 10% per year, such that by about 2030, if continued, the water table in much of the country will fall below the lift limit for suction pump wells, which are used for domestic water supply by more than 1.5 million people.[52]⁵² The falling water table also increases pumping costs, potential arsenic contamination, and land subsidence.[53]⁵³

However, the risks and opportunities associated with groundwater extraction are not uniform across the country. The overall sustainability of groundwater extractions is largely a function of weather, land use, and geology. Broad-scale assessments of the lower Mekong Basin suggest that groundwater recharge rates around Tonle Sap are generally greater than 20% of annual precipitation.[54]⁵⁴

Figure 14: Percentage of Households with Wells by Commune[55]⁵⁵



Although groundwater information is limited, geological maps suggest that opportunities for sustainable increases in groundwater use may be more likely in areas with older alluvial deposits (parts of Pursat, Siem Reap, and Kampong Thom) rather than in areas with newer alluvial deposits, which underlie most of the rest of the target area. The areas with older alluvial deposits and correspondingly greater likelihood for sustainable expansion of groundwater use are also areas with less commercially oriented rice production, smaller average land holdings, and greater poverty rates, which are also therefore more amenable to agricultural livelihood diversification via approaches that could take advantage of small-scale horticultural irrigation. (See discussion of this same issue under Output 2.1.1.)

Sufficient information for water-resource management is not only critical for climate resilience in agricultural communities, particularly for rice production, but is also a key prerequisite to engage with some sustainability-oriented value chains. For example, Mars Food—a major buyer of exported rice from Cambodia—has committed to reducing unsustainable water use by 50% by 2025 (equivalent to roughly 85 billion liters of water), primarily by purchasing agricultural products with high water-use efficiencies.

Finally, MAFF currently lacks a cohesive, effective, and sustainable approach to incentivizing adoption of climate-resilient agricultural practices, particularly via private-sector, market-driven mechanisms. This leaves land users and value-chain actors to formulate and enact significant yet disconnected investments on their own. To date, RGC’s related interventions have required significant public resources that have rarely effectively induced and leveraged sustained private-sector investments. Those shortcomings are due in part to insufficient technical assistance within Cambodia’s Agricultural

and Rural Development Bank (ARDB), MAFF, and MoE to accommodate the sector-specific challenges to financing such investments.

Currently, there is a limited volume and selection of financial products to support agricultural investments, due largely to a lack of knowledge in the financial sector about how to identify, assess, and price risk factors in the agricultural sector. Although different technologies and practices in agricultural value chains have very different risk-reward profiles⁵⁶, related to climate resilience, lenders typically assume and price in uniformly high risk, differentiating instead on other factors (e.g., borrower characteristics, type of securitization). Therefore, lenders typically limit their exposure to the agricultural sector and charge high interest rates, both of which limit support especially to smallholders and small and medium enterprises (SMEs). This means that the financial sector currently poses an unrealized potential to support technologies and practices with desirable risk-reward profiles in the agricultural sector. Given that climatic factors pose the single greatest risk to agricultural production, borrowers and lenders would benefit from financial products and terms that reflect the actual, stronger risk-reward profiles of technologies and practices that limit climatic risks (i.e., increase climate resilience and adaptation).

Similarly, relevant decision-makers in MAFF and MoE lack sufficient capacities to identify and support opportunities for blended financing of climate-resilient approaches in the agricultural sector. Currently, such initiatives are primarily financed via grants, concessional lending, and public debt. Private-sector financial support is under-utilized, largely because relevant private investment would typically require a blend of products and approaches to address different aspects of a proposal. For example, a coordinated initiative might pair public bonds for infrastructure, private debt for capital expenditures, subsidized debt for working capital, supply-chain credit for inputs, grants for technical assistance, philanthropy for transitional arrangements, and so forth. Given that climate-resilient approaches very often yield CCM benefits, investments in climate-resilience also pose a significant opportunity to support CCA efforts with CCM-related funding. The Climate Smart Agriculture (CSA)^[56]⁵⁶ framework is ideally suited to identify and strengthen those linkages. However, such multi-party, technically diverse arrangements require significant coordination. Currently, few organizations have the authority or capacities to do so. With strengthened capacities, RGC would be uniquely positioned to lead those efforts.

Barrier 2: Current agricultural networks are narrowly suited to conventional production practices that contribute to high vulnerability to climate change.

As described above, current agricultural practices in rice-growing communities of the Tonle Sap region are not resilient to climate change. They result in high sensitivities and afford low adaptive capacities. Although these communities are conceptually aware of climatic trends and the harms those trends continue to produce, farmers have limited access to technical assistance, technologies, and institutional support that would enable them to transition to more climate-adaptive practices.

For example, in order for communities to transition to greater levels of local diversification, farmers would need, among other things, (i) business models indicating local costs, markets, price variability,

feasibility, etc., (ii) options for financing such transitions and guarding against downside risks, (iii) local suppliers, technical assistance, labor, relevant machinery, and buyers, (iv) in the case of land-users in CPAs, clarity regarding the legal implications of crop-switching for land-use rights, (v) local coordination to ensure adequate economies of scale while avoiding homogenization, and (vi) governance mechanisms for relevant natural resources.

Critically, current agricultural systems unduly burden and limit the options of women, women-led households, and the elderly. This unfortunate circumstance is primarily a function of the organic maladaptations to economic and climatic trends. Various complex factors (e.g., comparatively higher wage-labor opportunities in urban areas and neighboring countries, comparatively low agricultural yields in Cambodia, infrastructural changes) have led to increased out-migration from these communities, particularly by working-age men. The roles of women have drastically expanded, often in ways that increase their personal and household vulnerabilities. These expanded responsibilities also limit their capacities and resources (especially in terms of time) to identify, create, and pursue new opportunities in the new socio-economic context. For example, reduced availability of time and labor may indicate opportunities for community-based market gardens for high-value crops, increased production of horticultural crops that require less labor and are more climate-resilient, increased conduct of home-based value-addition, increased pooling of resources for capital investments, etc.

Barrier 3: Agricultural value chains reinforce climate vulnerabilities.

Current agricultural value chains relevant to rice-growing communities in the Tonle Sap basin have evolved to suit conventional production practices and historical climatic patterns. These value chains do not account for climate change and are generally not robust to it. For example, agricultural value chains typically lack climate-adaptive technologies, such as adequate drying equipment and appropriate post-harvest storage facilities. Moreover, these networks are generally not conducive to switching to more climate-adaptive options. Although various value-chain actors are aware of climatic trends, they are generally unaware of specific actions, investments, or approaches that would efficiently contribute to improved resilience (e.g., lack of specific information on business modelling of opportunities, coordinating standards, etc.). Actors who consider moving into climate-adaptive niches face significant challenges in educating potential clients about climate-related value-addition.

Moreover, it is difficult for any given actor to initiate or sustain changes toward more climate-resilient options unilaterally. To varying degrees, value-chain actors also have a form of capital lock-in for current practices, which is reinforced by uncertainties about market demands, regulatory considerations, etc. relative to more climate-adaptive options. (As an extreme example, rice processors have a very high capital disincentive regarding a shift away from rice production.) Overall, many value-chain actors are waiting for clear, reliable market demand to incentivize such shifts?including institutional, financial, and technical support?as well as clear, structured frameworks in which their businesses will operate (e.g., regulatory frameworks, standards, value chains). For example, such actors are concerned that banks might not be familiar with climate-adaptive approaches, so might resist providing appropriate credit terms.

These barriers are generally more appreciable in areas with greater production from intensive agriculture (more commercially oriented, greater access to irrigation, larger farms, greater mechanization), such as in Battambang and Banteay Meanchey.

Barrier 4: Insufficient knowledge management systems.

Knowledge management systems for climate risks in the agricultural sector do not efficiently facilitate knowledge-sharing, link directly with relevant decision processes, or ensure feedback for continuous improvement. Stakeholders lack sufficient information-management processes to enable a cohesive decision-making framework that integrates strategic priorities, conditions in the agricultural sector, climatic changes, and mechanisms of support. In short, many stakeholders are largely blind to others' experiences regarding current conditions (e.g., harms, challenges, opportunities, suggestions), what is working, and what is not. Such formal and informal knowledge management systems are critical for effectiveness, efficiency, and continuous learning. This challenge extends from national to local stakeholders.

Additionally, project-based metrics are often insufficiently harmonized with governmental decision-processes. That is, project-based M&E systems are often constrained in scope and duration, and therefore provide limited utility for governmental decision-making processes and limited opportunities to concatenate metrics across projects and initiatives (particularly at different scales and in different sectors).

Similarly, a strategic approach has not been determined regarding the roles of the private sector in knowledge management systems. There are opportunities for an improved understanding of private-sector actors as (i) stakeholders/ users of information in such systems and (ii) potential contributors (e.g., linking relevant metrics and monitoring systems, service providers for various aspects of monitoring, interpretation, verification, communication, etc.).

1.a.2. The proposed alternative scenario with a brief description of expected outcomes and components of the project and the project's Theory of Change.

The project contributes to the over-arching goal of building climate resilience into the livelihoods of vulnerable rice-based communities in the Tonle Sap region. The project's objective is that rice-based communities in the Tonle Sap region of Cambodia reduce their climate vulnerability and increase their resilience to climate change through an ecosystem-based, market-driven approach.

Therefore, the project's alternative scenario is to increase climate resilience of vulnerable smallholders in rice-based communities faced by increasing climate impacts in the targeted provinces. The project aims to improve livelihoods through income-generating and value-adding activities by improving the enabling environment, promoting climate-resilient on-farm practices, and improving the resilience, efficiency, and profitability of the rice value chain. The project will promote new technologies and innovations to strengthen the resilience in production systems and reduce vulnerability to climate risks

and hazards. The project will also promote a market-based approach to improve climate resilience through the engagement of local private sector and will enhance the adaptive capacities and livelihoods of the targeted communities through development of agribusiness skills and agricultural cooperatives (ACs), producer groups including within CPAs. In particular, the project will seek to impact 5% of the total rice harvested area in the five provinces (67,309 ha), equating to roughly 37,000 rice-based households or 170,200 direct beneficiaries.

Project components and related outputs address the above-mentioned barriers to climate-resilient rice-based livelihoods in the target provinces, and are described below.

Component 1: Improving the enabling environment for climate change adaptation in the rice and related priority sectors through integrated policies and planning.

This component will improve the policy environment for integration of climate resilience into targeted sectors. The project will strengthen the capacity of relevant national institutions (particularly MAFF) to integrate climate change actions into their programming using the national budget, as well as to integrate agricultural considerations into climate change policies, including CCA goal-setting and planning processes. Therefore, the implementation will be in close coordination and partnership among key partners under the leadership of GDA and GDLC.

Outcome 1.1.: Strengthened national and sub-national climate change adaptation policies, planning frameworks, and governance.

To achieve this outcome, the project will deliver outputs to strengthen the networks, capacities, and plans for CCA in the agricultural sector that will be delivered locally under Component 2 (technologies and practices for climate-resilient agricultural production) and Component 3 (technologies and institutional support for climate-resilient agricultural value chains). In particular, outputs under this outcome will strengthen: capacities of national and sub-national institutions to establish and implement multi-level, data-informed CCA strategies and plans in the agricultural sector (Output 1.1.1.), inter-ministerial coordination for CCA-related decision-making (Output 1.1.2.), agro-meteorological advisory services (Output 1.1.3.), and related financial and incentive mechanisms (Output 1.1.4.).

This outcome contributes to the following prioritized adaptation actions in Cambodia's NDC:

- 2 Strengthening technical and institutional capacity to conduct climate change impact assessments, climate change projections and mainstreaming of climate change into sector and sub-sector development plans

- ? Promoting and improving the adaptive capacity of communities, especially through community-based adaptation actions, and restoring natural ecology system to respond to climate change
- ? Developing climate-proof agriculture systems for adapting to changes in water variability to enhance crop yields
- ? Developing crop varieties suitable to Agro-Ecological Zones (AEZ) and resilient to climate change

Additionally, activities under this outcome align with the NAP process and the CCCSP and the SCCAP for agriculture (CCCPAP-AFF).

Output 1.1.1.: National and sub-national institutions have improved capacity for comprehensive planning and implementation.

Activities under this output improve national and sub-national institutions' capacities to access and integrate data that directly and efficiently inform strategies and decision-making processes for CCA in the agricultural sector. All activities under this output will closely coordinate with the current FAO-implemented project funded via GEF's Capacity-building Initiative for Transparency (CBIT)^[57]⁵⁷: Strengthening Capacity in the Agriculture and Land-use Sectors for Enhanced Transparency in Implementation and Monitoring of Cambodia's Nationally Determined Contribution (NDC)^[58]⁵⁸.

At present, many decision-making processes for addressing climate-change in the agricultural sector are *ad hoc*, informal, or unclearly defined. Having more clearly defined decision processes will help to formalize institutional and individual responsibilities, substantiate data access, identify inefficiencies, and highlight informational gaps. Therefore, the project will **map key decision-making processes relevant to CCA planning in the agricultural sector**, identifying critical decisions (first), who makes those decisions, when and how often they are made, the dependencies of those decisions (i.e., necessary and sufficient predicates), outcomes of the decisions, and any current or anticipated metrics to track or evaluate the decision-making processes. In particular, the project will identify critical informational gaps and opportunities for improved informational quality for each key decision. Subject to review and adjustment by the TAG, informational quality will be gauged primarily by the extent to which information is useful for reaching an informed decision (i.e., utility or fitness for purpose). It is expected that utility will largely be a function of accuracy^[59]⁵⁹, accessibility^[60]⁶⁰, and efficiency^[61]⁶¹.

This activity will link closely with Outcome 1.1 of the GEF CBIT project: "Increasingly accurate and timely information and data are being collected by sub-national and national authorities responsible for the AFOLU^[62] sectors and are being incorporated into reporting under the ETF^[63]". Additionally, this activity can demonstrate how information associated with UNFCCC reporting can contribute to useful scenario-development and planning at national and sub-national levels.

This activity will also link closely with FAO's Support Programme on Scaling-up Climate Ambition on Land-use and Agriculture through NDCs and NAPs (SCALA), which is supporting translation of the NDC into actionable and transformative climate actions in land-use and agriculture with multi-stakeholder engagement, emphasizing collaboration between the public and private sectors. In particular, this LDCF project will link the key priorities identified under SCALA with decision processes and informational gaps.

Under this output, the project will also **conduct climate vulnerability and risk assessments (VRAs)** in the project's five targeted provinces. These VRAs will provide critical information to assist policy-makers and other key stakeholders in making well informed decisions for climate-resilient land-use planning in the agricultural sector, especially in the Tonle Sap Plain. These assessments will inform not only MAFF and MoE—including their respective PDAFFs and PDoEs—but also the development and implementation of community-based local adaptation plans (LAPs; see Outputs 1.1.2., 2.1.1., and 2.1.3.). Additionally, the assessments better enable the incorporation of locally specific climate-resilience priorities into Commune Investment/ Development Plans (CIPs/ CDPs). VRA content will align with the CCA metrics from CBIT Outcome 1.1 and will explicitly reflect the particular vulnerabilities and resilience of women and vulnerable groups. These metrics will also harmonize with agricultural indicators in the CSDGs and NSDP, which are currently primarily production-oriented.

The timing of the first VRAs will be discussed and determined in the inception phase in order to coordinate with local activities under Components 2 and 3 for best effect. A highly important consideration is that once the project engages stakeholders during implementation, it will be critical to maintain momentum and deliver quick benefits while building toward medium- and longer-term benefits. Therefore, it may be advisable to delay the first VRA until after development of the FFS modules, criteria for value-chain interventions (e.g., support to ACs, producer groups including within CPAs, CRIP criteria, project-based grant investment criteria), and related TOTs have been completed. National and provincial partners—especially the project's operational and execution partners—have a sufficiently clear understanding of local vulnerabilities and priorities to conduct preparatory and foundational work in the inception phase prior to initiating engagement with local stakeholders. Thus, the conduct and results from the first VRA can be incorporated into a continuous flow of stakeholder engagement rather than conducting the VRA, disengaging from local stakeholders for an extended period to conduct preparatory work (e.g., FFS curricula, TOTs, establishing CRIP criteria), then returning to re-engage. This issue is reiterated in the respective outputs under Components 2 and 3.

It is expected that the vulnerability and risk assessments will make use of FAO's Tool for Agroecology Performance Evaluation (TAPE)^[64], because it integrates climate resilience with multiple

dimensions of development, is highly participatory, and links with decision processes. The choice of specific tool will be reconfirmed during the project's inception, following consultation with the TAG.

The goal of TAPE is to produce evidence on the performance of agroecological systems across the environmental, socio-cultural, economic, health/ nutrition, and governance dimensions of sustainability to support agroecological transitions at different scales, in different locations, through different timeframes, and to support context-specific policy-making on agroecology. In simplified words, the analytical framework aims at providing a diagnostic of agricultural performance across many dimensions to move beyond standard measures of productivity (e.g. yield/ ha) and better represent the benefits and tradeoffs of different agricultural systems.

The specific objectives are to:

- Build knowledge and empower producers through the collective process of producing data and evidence on their own practices;
- Support agroecological transition processes at different scales and in different locations by proposing a diagnostic of performances over time and by identifying areas of strengths/weaknesses and enabling/disabling environment;
- Inform policy makers and development institutions by creating references on the multi-dimensional performance of agroecology and its potential to contribute to the SDGs.^[65]⁶⁵

TAPE assesses agroecological conditions and transitions on 10 core dimensions: 1. land-use rights, 2. productivity (and stability over time), 3. income (and stability over time), 4. extent of value-addition, 5. exposure to pesticides, 6. dietary diversity, 7. women's empowerment, 8. youth employment, 9. agricultural biodiversity, and 10. soil health. TAPE also accommodates additional dimensions. Subject to review and approval or no-objection by the TAG and PSC during the inception phase, this activity may augment the core TAPE dimensions with additional diagnostic and mapping tools. For example, subject to TAG consultation during the inception phase, the project might include progress toward product traceability in TAPE.

During the PPG phase, FAO conducted a regional training on TAPE,^[66]⁶⁶ translated TAPE surveys into Khmer, integrated it into the Kobo platform for operational delivery, and conducted 1 field test of TAPE (Takeo Province) and 1 national workshop^[67]⁶⁷ on TAPE in preparation for expanded field piloting. Further piloting covered 265 farming households in the Tonle Sap Plain lowlands, Tonle Sap Plain uplands, Mekong Plain lowlands, and Plateau (upland).

During the project, TAPE (or other approach adopted under this output) activities will be closely linked both technically and operationally with the project's M&E framework, especially with the

customized tool based on the cloud-based platform, Monitoring and Evaluation of Agri-science Uptake in Research and Extension (MEASURE)[68]⁶⁸, developed by the International Crop Research Institute for the Semi-arid Tropics (ICRISAT).[69]⁶⁹

FAO-supported analyses[70]⁷⁰ during the PPG phase indicate that TAPE is particularly well suited to monitoring SRP-relevant dimensions and integrating those dimensions within a broader context of climate resilience, agro-ecology, and rural development. Moreover, TAPE's suitability for SRP (e.g., integration of traceability) establishes a basis for post-project sustainability and durability with support from buyers who are interested in investing in progress toward sustainability standards (e.g., SRP, improved traceability). Post-project continuation of TAPE may also be provided by public or private service providers through open bids (e.g., IRRI, ICRISAT, FarmForce, CropIn, Peterson, etc.).

Assessments with the adopted tool(s) will be conducted per the respective operational procedures on statistically generalizable samples in the targeted communities. Assessments will be conducted at inception, mid-term, and prior to the final evaluation, though the specific modality(-ies) might change over the course of the project at the discretion of the PSC.

Lastly under this output, the project will **develop national and provincial (within targeted provinces) capacities to develop climate-change scenarios**. Capacities will be developed to integrate VRAs, agro-ecological zone (AEZ) modelling, and (provisionally) inputs from FAO's Climate-change Platform for Risk Analysis and Agricultural Planning (C-PRAP). This activity links directly with CBIT Outcome 3.1: "Monitoring and reporting of NDC priority adaptation actions in the agriculture and land-use sectors strengthened." Moreover, C-PRAP data may be used to pre-populate some CCA fields in the ETF reporting structure supported by CBIT. The primary national agencies to be targeted for capacity development include GDA, GDLC, and MoE's General Directorate for Environmental Knowledge and Information (GDEKI). This list of agencies as well as the specific PDAFF offices will be confirmed in consultation with the TAG and with approval of the PSC during the inception phase.

Indicative Activities:

- ? 1.1.1.1.: Map key decision-making processes, gaps, and opportunities relevant to CCA planning in the agricultural sector.
 - ? 1.1.1.2.: Conduct VRAs in the five targeted provinces, incorporating AEZ climate modelling for longer-term adaptation planning.
 - ? 1.1.1.3.: Develop materials for trainings and trainings-of-trainers (TOTs), and deliver TOTs for incorporating VRAs, AEZ scenario-modelling, and C-PRAP.
 - ? 1.1.1.4.: Deliver trainings from 1.1.1.3.
-

Output 1.1.2.: Cross-ministerial and cross-sectoral coordination in climate change adaptation and agriculture improved, in collaboration with the Cambodia Climate Change Alliance.

Activities under this output will support harmonization of strategies and metrics related to climate adaptation, agriculture, vulnerable groups, and women's empowerment. As such, activities under this outcome align directly with CBIT Outcomes 1.1 and 3.1 (as noted above).

First, the multi-stakeholder platform contributing to the CCA aspects of CBIT Output 1.1 will be the basis for **establishment of an inter-sectoral network for scenario-building for CCA planning**. This platform will focus on planning and scenario-building at national and landscape levels (specific to the Tonle Sap Plain).

Second, the project will improve CCA-related data flows for aggregation and planning by supporting the **connection of commune-level data to the NCSD portal**.

Third, the project will **develop protocols for sub-national CCA planning in the agricultural sector**. The formats and timing of these protocols will align as much as possible with those of other sectors in order to provide a streamlined inter-sectoral planning process at sub-national levels. In particular, these protocols will guide the drafting of local adaptation plans (LAPs) and the integration of LAPs into CIPs and DIPs. These protocols will emphasize broad inclusivity, including private-sector actors in agricultural value chains. These protocols will provide a structured basis for developing LAPs based on down-scaled scenario-modelling, informed by stakeholders' priorities, and reflective of climate-adaptive options. Communities can incorporate drafting of LAPs into the Farmer Field Schools (FFSs) delivered under Outputs 2.1.1. and 2.1.3. Under this project, alignment with a LAP is a preferred criterion for access to project support via Community-led Resilience Investment Packages (CRIPs) administered under Component 2 and provide a rationale for proposals for value-chain investments under Output 3.1.4.

These efforts not only directly contribute to the Cambodia Climate Change Strategic Plan, 2014 ? 2023 (CCCSP) and the associated sectoral plan for agriculture, but also address specific objectives from Cambodia's National Adaptation Plan (NAP), such as improving the linkages between NCSD and the National Committee for Sub-national Democratic Development (NCDD). The NCSD's strategic directives are supported and operationalized via the General Secretariat for Sustainable Development (GSSD), which is in turn technically supported by MoE-DCC. Thus, NCSD, GSSD, and DCC work in concert to steer and operationalize RGC's NAP process. CCCA is the primary mechanism of inter-sectoral, multi-stakeholder coordination feeding into the NCSD.^[71] Therefore, given that the NCSD is located within MoE, GDLC will be the primary institutional link between the project and CCCA.

Finally, via support to and collaboration with CCCA, the project will **enable GDA and GDLC to provide relevant inputs into development of the agricultural dimension of the online tracking system for RGC's NDC**, as well as related linkages between the NDC and SDGs.

By supporting the NDC online tracking system, this activity strengthens the implementation of the M&E framework for RGC's overall, inter-sectoral climate response and facilitates coordination toward the NDC (national) and CSDGs (national linked to global). These activities also contribute directly to the NAP, both at national and sectoral levels.

Indicative Activities:

- ? 1.1.2.1.: Establish an inter-sectoral network for scenario-building for CCA planning for Cambodia and the Tonle Sap Plain.
- ? 1.1.2.2.: Connect commune-level data to the NCSD portal.
- ? 1.1.2.3.: Develop protocols for sub-national CCA planning in the agricultural sector.
- ? 1.1.2.4.: Inform the agricultural dimension of the online tracking system for the NDC.

The three preceding activities will be conducted by GDA and GDLC in close collaboration with the Ministry of Women's Affairs (MoWA), NCSD's CCTWG, TWG-AW, and CCCA (particularly with UNDP's coordination team).

Output 1.1.3.: Integration of water-related information into agricultural CCA planning and decision processes at national and landscape levels strengthened.

This output improves the enabling environment for national and landscape-level (Tonle Sap Plain) stakeholders in the agricultural sector to access, interpret, and integrate agro-meteorological and hydrological information for CCA decision and planning processes. Given the particular vulnerabilities of rain-dependent farmers, information is especially important regarding weather forecasts, agro-meteorological services, groundwater, and early warning systems. Improved institutional arrangements and capacities will enable more strategic and better-informed policy-makers, administrators, and extension services, leading in turn to more climate-adaptive farmers (e.g., appropriate planting times, harvesting times, crop management, severe weather, seed selection, etc.), who are directly supported under Components 2 and 3.

This output links directly with Output 1.1.1., which seeks in part to improve the quality of strategic decision-making via improved information. This output places distinct emphasis on the importance of water-related information (agro-meteorological information, hydrological information, water-demand modelling, information-management processes, mandates, access, utility, etc.), given the critical role of water in the economic, biophysical, and social resilience of agricultural communities.

Access to basic agro-meteorological information (e.g., temperature, precipitation, barometric pressure) is critical for the adaptive capacities of agricultural communities. It significantly improves farmers?

climate resilience by enabling them to decrease climate-related exposures and reduce sensitivities. Advanced agro-meteorological information can confer additional benefits. Therefore, the project will work with providers of agro-meteorological advisories in the target locations to (i) assess the utility of current advisories, (ii) identify opportunities to improve the operational efficiency and utility of available agro-meteorological and hydrological information (e.g., access, aggregation, interpretation for provincial and local use, dissemination processes, extension support), and (iii) improve the integration of relevant agro-meteorological and hydrological advisories (e.g., from the Ministry of Water Resources and Meteorology; MoWRAM) into MAFF's planning, decision-making, and extension services, aiming for a harmonized landscape-level approach. Although these activities focus on national and landscape-level processes, they have inherent links with provincial, district-level, and local users. In addition to the sub-national consultations mentioned above, this activity is anticipated to entail dialogues at the national level to establish data-access and -sharing mechanisms, potentially facilitated via the TWG-AW.

Whereas this output pertains primarily to national and landscape-level processes, it has implications for district and local applications as well. For example, assessments and identified opportunities from this output will inform development of relevant FFS modules and packages under Component 2. For example, in line with this output, it may be deemed appropriate for the project (under Component 2) to develop a package of equipment, procedures, and training to enable local communities (e.g., agricultural cooperatives, producer associations, farmer groups) to conduct basic agro-meteorological monitoring and improve utility of agro-meteorological advisories. Such a package could be offered as a menu option (or integrated with other menu options, such as for FFS for IPM or WRM) for local communities under Outputs 2.1.1. and 2.1.3.

IRRI's engagement in the execution of this output is expected to facilitate integration with and up-scaling of the Remote-sensing-based Information and Insurance for Crops in Emerging Economies (RIICE) project [72]⁷² and to link with corresponding activities under Components 2 and 3, particularly regarding FFS packages (Outputs 2.1.1. and 2.1.3.) and value-chain resilience (Outputs 3.1.1. and 3.1.4.).

Indicative Activities:

- ? 1.1.3.1.: Assess the efficiency and utility of informational processes and products for water-related planning and decision-making for agricultural CCA.

This activity will be executed by IRRI in coordination with MOWRAM, GDA, and GDLC. It is anticipated that this assessment will entail multi-stakeholder consultations at national, sub-national, and local levels. The perspectives of women and vulnerable groups will be actively sought and incorporated. Prioritized actions for improvements will be identified.

- ? 1.1.3.2.: Execute prioritized actions identified under 1.1.3.1.
-

This activity will be executed by GDA and GDLC in coordination with MOWRAM and IRRI.

- ? 1.1.3.3.: Develop a tool-kit of resources to enable key decision-makers in MAFF and MoE to access relevant agro-meteorological tools and information in order to strengthen support to extension services for greater climate resilience.
- ? 1.1.3.4.: Conduct trainings and trainings of trainers (TOTs) for relevant stakeholders in MAFF and MoE (for products of 1.1.3.3.).

The two preceding activities will be executed by IRRI in good coordination and planning with GDA and GDLC. Efforts will be to strengthen capacity of GDA on use of climate forecast (flood, drought forecast) and translate them into advisory services for agricultural application.

Output 1.1.4.: Financial and incentive mechanisms through MAFF for climate-resilient agriculture developed.

[NB: The following section contains lengthy bulleted lists. These lists reflect some appreciable progress during the PPG phase on provisionally identifying potential solutions for further exploration. Thus, these lists are meant to clarify the intent of the output by providing concrete indications of the types of solutions that might be examined during implementation.]

Activities under this output will increase adoption and strengthen the financial viability of climate-resilient agricultural approaches. Prioritization of these incentives will follow a modified cascade approach^[73]⁷³, whereby the highest-priority incentives are those that are embedded in markets (enabled by policy reforms), followed by those that require transitional support (e.g., via short-term subsidies, project-based support, etc.), then by those that require steady-state support (e.g., via annual governmental budgets, other public investments), and finally by those that are not conducive to financial incentives.

These activities will identify and draft adoption-ready policy proposals to support, *inter alia*, up-scaling of contract farming^[74]⁷⁴ and agricultural standards. Contract farming frequently offers several benefits, including better or more reliable access to markets, quality seeds, technology, technical assistance, credit, and service-related payments. However, contract farming also frequently poses several challenges, including high requirements for varietal purity, strict requirements for moisture levels, and limited recourse for breached contracts. Under this output, the project will evaluate options for policy-based support for contract farming. Stakeholder consultations and desk reviews during the PPG phase suggest several options to assess for feasibility, such as:

? Training on contract farming for producers and buyers, including pros, cons, best practices, and relevant skills

? Facilitating arrangements for millers to locate equipment for critical post-harvest processing at ACs (e.g., drying equipment)

? Enabling producer organizations to verify quality-based criteria for contract fulfillment, particularly for moisture content

? Improving access to and supply of high-quality seed,^[75] which is a critical determinant of yield and varietal purity, a primary criterion of quality. This action would be particularly effective if coordination between seed producers, rice growers, and buyers ensures that varieties correspond with market demand rather than preferred varieties for home consumption.

? Facilitating increased speed of payments or lengthened repayment periods in order to reduce side-selling.

o Producers sometimes breach contracts by side-selling (i.e., selling to a convenient trader rather than to the contracted buyer) in order to repay their high-interest creditors sooner than would be possible if they were to wait for payment under the contract. Contracted payments are frequently delayed because buyers lack sufficient working capital.

? Strengthening contract enforcement. For example, MAFF might do this by enacting Chapter 2, Article 7 of the Sub-decree on Contract Farming, which states that the Coordination Committee for Agricultural Production Contracts (CCAPC) shall intervene or reconcile arguments or conflicts that might occur from the implementation of contract farming. Although the described purview of the CCAPC is national, an analogue of this function?e.g., arbitration?could be enacted at provincial level.

It is expected that this review will also assess the feasibility and impact of options for strengthening other forms of market-based incentives. Analyses and consultations during the PPG phase suggest numerous possibilities, including:

? Strengthening cooperatives and producer associations (e.g., capacity development, reduced regulatory constraints on shareholder payments versus retained operating capital)

? Supporting sectoral or sub-sectoral platforms (e.g., fragrant rice, traditional varieties, rain-fed), including standards-based networks and platforms, such as SRP or CamGAP (e.g., via a national SRP chapter)

? Strengthening farm partnerships

? Standardizing support for financial efficiency between value-chain actors (e.g., provision of contract templates or voluntary standard terms for working-capital loans between value-chain actors)

? Strengthening producers' business skills (e.g., contracts, negotiations, financial literacy, book-keeping)

- ? Improved access to working capital, credit (e.g., pre-financing), and mechanisms to speed payments
- ? Strengthening connections and information-sharing between value-chain actors (e.g., between producers and processors, processors and wholesalers, etc.)
- ? Increasing productivity and profitability via improved access to mechanization and relevant crop-management information (e.g., agro-meteorological information for higher yields, higher net profits from improved efficiency of inputs due to land-levelling, increased resource-use efficiency)
- ? Increasing transparency throughout supply chains to reduce transaction costs from informational inefficiencies and asymmetries
- ? Strengthening enforcement and accountability (e.g., of contracts)
- ? Facilitating or developing the potential for blended financing options, such as smallholder sustainable rice bonds
 - o The feasibility of using such bonds to support up-scaling of climate-smart rice in Asia is currently being explored by SRP, Phoenix Group, BNP Paribas, ADB, and others. MAFF is potentially in a position to provide technical and policy-based support for this approach.

Note that whereas activities under this output evaluate and prioritize these options, the project will also support operationalization of prioritized incentives with producers (Component 2) and other value-chain actors, especially for rice (Component 3).

There are also many possibilities for policy reforms to facilitate value-chain actors providing direct support for up-scaling of climate-resilient technologies and practices. Consultations and analyses during the PPG suggest several options, including:

- ? Downstream-based financing of upstream adoption, technology transfer, technical assistance, etc.
 - o For example, Mars, Inc. is exploring pre-financing options for Cambodia's rice value-chain actors, for which public-sector support would help (e.g., technical assistance, financial literacy training, etc.).
- ? Working capital loans between value-chain actors
- ? Incentives (e.g., discounts) for electronic payments (e.g., electronic deposits to bank accounts, payments to mobile "wallet" apps) in order to speed payments and improve efficiencies (e.g., reduced paperwork, improved audit records)
- ? Technical support programs to enable farmers to comply with sustainability standards (e.g., SRP) or to adopt climate-resilient practices or technologies
- ? Commitments to source rice from producers meeting sustainability criteria (e.g., SRP Standard)
 - o For example, Mars, Inc. is targeting 100% SRP sourcing (currently 30% of rice purchased from Cambodia).

- ? Broadening the scope of sustainability criteria to enable more integrated support to producers
- ? Increasing marketing of sustainable rice (e.g., via the newly launched SRP Assurance Scheme, which includes ?SRP-Verified? labelling)
- ? Incorporating gender-related considerations into strengthened supply chains in order to ensure that resilience benefits reach, benefit, and empower all value-chain actors
- ? Expanding and deepening commitments to producer support and sustainable sourcing
- ? Developing and applying more integrated sustainability/ labelling criteria
- ? Supporting research and development for integrated approaches to agricultural production and landscape management
- ? Developing multi-stakeholder networks for sustainable production landscapes
- ? Enabling downstream payments for upstream value-addition (e.g., post-harvest processing, storage, transportation)

Activities under this output will also improve capacities of Cambodia's Agricultural and Rural Development Bank (ARDB)[76]⁷⁶ and relevant decision-makers in MAFF and MoE to enable and secure financing for climate-resilient agricultural technologies, practices, and associated value chains. Similarly, the project will capacitate relevant decision-makers in MAFF and MoE to identify and support opportunities for blended financing of climate-resilient approaches in the agricultural sector. Based on the preceding assessments under this output, this is expected to include developing MAFF's capacity to support standards-based production (e.g., expanded adoption of SRP Standard, CamGAP, organic, and associated assurance approaches, such as PGS or the recently finalized SRP Assurance Scheme[77]⁷⁷; see Output 3.1.3.). GDA will ensure that this work coordinates closely with related support from Swisscontact Cambodia (regarding the SRP national chapter) and WCS (regarding the Assistant Coordinator for the SRP national chapter).

These capacity-development activities also link directly with the process of evaluating and funding Community-led Resilience Investment Packages (CRIPs) under Component 2 and value-chain investments under Component 3. Execution of those outputs provides real-world, real-time opportunities to build capacities and strengthen systems (under this output) for improved delivery of financing options for CCA in the agricultural sector.

During the PPG phase, FAO and CIAT assessed the current context and opportunities for private-sector investments in CSA.[78]⁷⁸ The forth-coming report[79]⁷⁹ covers conventional and innovative financial instruments for CSA, public- and private-sector sources of financing for CSA, key parameters for private-sector investors, and guidance for matching private investors with CSA interventions. With

strengthened capacities, RGC will be uniquely positioned to lead coordination of those multi-party, technically diverse arrangements.

Therefore, the project will conduct trainings and provide associated technical assistance to MAFF, MoE, ARDB, and other relevant financial-sector stakeholders to incorporate CCA considerations into their policies and portfolios for the agricultural sector, including through the facilitation of blended financial approaches.

Indicative Activities:

? 1.1.4.1.: Conduct policy analyses of prospective incentive mechanisms for climate-resilient agricultural production, including contract farming and agricultural standards, and recommend policy-based approaches using a cascade-based prioritization scheme.

This activity will be coordinated by GDA (see output 3.1.3) and GDLC pertaining to CPAs in partnership with GIZ as key executing agency in coordination with WCS .

? 1.1.4.2.: Draft and conduct full vetting for adoption-ready policies to support market-based incentive mechanisms and financing options for climate-resilient approaches in the agricultural sector.

This activity will be conducted by GDA in coordination with GIZ and with GDLC for issues pertaining to CPAs.

? 1.1.4.3.: Conduct trainings and provide associated technical assistance to MAFF, MoE, ARDB, and other relevant financial-sector stakeholders to incorporate CCA considerations into their policies and portfolios for the agricultural sector, including through the facilitation of blended financial approaches.

This activity will be conducted by GIZ in coordination with GDA, GDLC, and recipient agencies.

Component 2: Supporting resilient production systems in rice-based communities for improved livelihoods.

This component will increase the climate resilience of agricultural production systems in rice-producing communities in targeted provinces. Outputs under this component will use farmer field schools (FFS) and community-led resilience investment packages (CRIPs; see description under Outcome 2.1) as mechanisms to (i) combine capacity-building with tangible investments and (ii)

increase adoption of climate-adaptive on-farm practices and technologies, especially those that strengthen linkages to market-driven incentives (i.e., relevant policies and networks under Component 1 and value-chain development under Component 3; e.g., to engage in production contracts, align with climate-adaptive production standards,[80]⁸⁰ transition to certification systems[81]⁸¹). Outputs under this component will link closely with supports to value-chain actors in Component 3 (e.g., agricultural cooperatives).

This component contributes to the following prioritized adaptation actions in Cambodia's NDC in close coordination and partnership among key partners under the leadership of GDA and GDLC:

- ? Promoting and improving the adaptive capacity of communities, especially through community-based adaptation actions, and restoring natural ecology system to respond to climate change;
- ? Developing climate-proof agricultural systems for adapting to changes in water variability to enhance crop yields;
- ? Developing crop varieties suitable to Agro-Ecological Zones (AEZ) and resilient to climate change.

Outcome 2.1.: Increased resilience and adaptive capacities of production systems and the natural resource base.

Outputs and activities under this outcome will be delivered via two primary mechanisms: farmer field schools (FFS)[82]⁸² and community-led resilience investment packages (CRIPs). FFS is a well regarded and widely supported approach in Cambodia, with a substantial track record of high community engagement and durable results. FFS is an interactive and participatory approach that emphasizes 'learning by doing' in order to increase participants' understanding of agro-ecosystems and locally appropriate technologies and practices, leading to production systems that are more resilient in local conditions and that more efficiently utilize available resources.

FFS participants meet regularly to engage in hands-on learning that combines training with community-led experimentation to identify best practices in local contexts. FFSs thereby not only increase participants' knowledge of local circumstances and available solutions, but also—and far more importantly—empower individuals and communities to adapt to emerging circumstances.

FFS is highly conducive to a modular approach, whereby various topics can be plugged in to the FFS delivery mechanism. The FFS content will comprise a core module[83]⁸³ plus additional modules.

The core module will focus on CSA and contain integrated content on gender-related risks, considerations, and opportunities. Given the prevalence of rice farming in the target area, much of the content in the core module will focus on prioritized requirements in the SRP Standard^[84] (or alternative standard as specified by the PSC, with the aim of best meeting local communities' CCA priorities). Based on the core FFS CSA module, participating communities will understand their exposure, sensitivities, and adaptive capacities with respect to current and anticipated climatic trends, as well as options for strengthening both threat-specific and general resilience. Through a participatory process, each participating district^[85] will also select a package of additional FFS modules from a menu of options. Examples of additional modules are described below in the relevant outputs. All FFS materials will be available and presented in Khmer as well as in other local languages as appropriate.

In order to magnify and capitalize on the capacities and momentum of the FFSs, the project will also support community-led resilience investment packages (CRIPs) for certain outcomes in selected communities. CRIPs are the project's CCA small-grants mechanism; the name (CRIP) serves to emphasize that the proposals are community-led and to help various partners know which small grants are associated with this particular project versus other sources. Communities may submit proposals for CRIP funding support in line with criteria established to ensure durable, equitable increases in local resilience. To qualify, communities must create a local adaptation plan (LAP), to which the CRIP proposal must contribute, and the LAP must be incorporated into the community's Commune Investment or Development Plan (CI/DP), even if funding sources for the LAP are not fully identified. Although many CIPs currently list activities for climate adaptation, disaster risk reduction, or environmental issues, CIP funds^[86] are very rarely allocated to those activities. To a lesser extent, district investment plans (DIPs)^[87] evince a similar pattern.

CRIP funding will preferentially rely on local labor and supplies, ensuring that (i) project funds maximally benefit local communities and (ii) local communities retain access to the necessary skills and sources for post-project replication or up-scaling. CRIP funding will also preferentially support projects for which local communities cofinance the investment, such as with CIP/ DIP funds or by supplying wage labor at a discounted rate compared to a set project-wide benchmark (i.e., such that the difference between the benchmark and concessional wages counts toward community cofinancing). When possible, linking CRIP funds to CIP and DIP cofinancing ensures that agricultural communities' climate-resilience priorities are meaningfully mainstreamed, funded, and addressed. Additionally, the CRIP model ensures high-quality delivery, because communities cofinance the investments and will be part of the sign-off for delivered works under CRIP funds, which also ensures transparency. Therefore, suppliers are accountable to the community. Examples of CRIP-eligible investments are described below in the relevant outputs (2.1.1. and 2.1.3.).

As noted under Output 1.1.1., it is very important that the timing of initial engagement with local stakeholders enables continuous momentum, delivering short-term benefits while building toward medium- and longer-term benefits. Therefore, for example, Activities 2.1.1.1. ? 2.1.1.4. and 2.1.1.6. can likely be completed prior to initial implementation engagement with local stakeholders. This delay in initial engagement ensures that all materials and operational protocols (e.g., FFS materials and trainers, CRIP protocols) are ready to follow sequentially for sustained momentum. For example,

under Component 2, after preparatory work has been completed, communities will be engaged to establish the institutional structure for FFS, which is the project's primary point of contact with each community (complemented by the project's engagement with ACs and producer groups including within CPAs under Component 3). It is envisaged that a rapid, participatory, community-based VRA would then be conducted (Output 1.1.1.), thereby feeding immediately into LAP development under the auspices of the FFS.

Output 2.1.1.: On-farm diversification for improved resilience against climatic variations demonstrated and scaled out.

Diversification of production and livelihoods reduces exposure and sensitivity to various shocks, thus building both threat-specific and general resilience. Diversification also increases capacities for absorption, adaptation, and transformation in response to shocks and slow-onset disasters (both of which result from climate change). Activities under this output will increase diversification of agricultural production and livelihoods. FFS modules will strengthen capacities and CRIPs will complement those capacities with related, tangible investments.

In addition to the CSA and gender content of the core FFS module described above, the project will support a menu of additional FFS modules to capacitate communities for diversification of agricultural production and livelihoods. FFS modules relevant to this output will cover, for example, crop diversification, dry-season crops, rice-fish systems, integrated farming systems, vegetable/ market gardens, horticulture (including, as locally appropriate, agroforestry options), perimeter plantings, strip/ alley cropping, inter-cropping, livestock integration (especially dual-purpose or layer chickens), off-season cultivation (e.g., watermelon, chilies, onion, garlic, beans), and multi-use plantings (e.g., feed, fodder, fuel, framing, etc.).^[88] Production-diversification options will build on the AEZ and crop-suitability modelling in Output 1.1.1. in order to ensure that the project supports options that are resilient for both current and projected climate trends. An additional supporting module may also be selected (e.g., for agro-meteorological monitoring, local WRM, etc.).

During PPG consultations, many farmers stated that they lacked sufficient information to make informed decisions about whether and how to diversify production or livelihoods. In many communities, local mimicry is the most common basis for such decisions. (I.e., if people see someone doing well with something, many people copy it.) Such patterns of homogenous local production lead to boom-and-bust cycles and homogenized risk profiles. In order to overcome this obstacle to diversification, FFS packages for on-farm diversification will include, by default, a module for business skills (e.g., covering financial literacy, credit, contract farming, record-keeping, business planning, organizing producer groups) as well as business plans for locally appropriate, climate-resilient diversification options.

These business plans will provide structured, comparable overviews of production models, enabling farmers to see what adoption of different practices would entail. The plans will include, for example, input requirements (e.g., seed, fertilizer, water), land requirements, availability of inputs, regional suitability, market demand, value-chain overview, suggested minimum production (in order to

determine the critical mass of producers for economies of scale), labor requirements, capital requirements, necessary or suggested equipment, opportunities for value addition, suitability for market-timing (e.g., drying, storage), by-product markets, gender-specific considerations, opportunities for particularly vulnerable groups, and sources of technical and financial support. Critical considerations for each plan (e.g., labor requirements, input costs, farm-gate prices) will include estimated values for the 20th, 50th, and 80th percentiles^[89]⁸⁹, so that farmers can better understand the variability to expect for different options in bad, normal, and good years.

FFS content will contain opportunities that are particularly suited to adoption by women, women-led households, and the elderly, as well as locally identified vulnerable groups. Proposed business/ adoption models will be designed to facilitate different levels and versions of adoption, such as non-competitive, partial, phased, tentative, or occasional adoption. The plans will provide options for transitions to various end states. For example, home gardening (e.g., leafy vegetables, tomato, herbs, cucumber), perimeter plantings, and dry season cropping (e.g., green manure, mung bean, pigeon pea) provide means of diversification that do not compete with existing land uses (especially rice farming). Alternatively, alley cropping or inter-cropping may facilitate transition to agroforestry, for example. Seasonal rotation and trial plantings (i.e., covering only a portion of available land) are options for partial adoption. The project will continue to incorporate successful practices and technologies based on input and feedback from various partners. For example, the agricultural technology park in Battambang is demonstrating promising diversification technologies and techniques.

FFS packages will provide relevant toolkits (e.g., basic agro-meteorological monitoring equipment, nursery equipment, direct seeders, seed drills, drip irrigation systems, etc.). Ideally, FFS packages will be linked with CIP, DIP, or CRIP investments. Climate-resilient practices and technologies will be modelled by lead farmers^[90]⁹⁰, who have been locally nominated and selected based on their locally recognized farming skills, conscientiousness, and commitment to engaging with the project. If necessary or appropriate, the project may provide contextually appropriate incentives for adoption, such as guarantees against income loss, subsidized inputs, etc.

This output will be best suited to communities for which future-oriented AEZ and crop-suitability maps (Output 1.1.1.) indicate that resilience may require some degree of transition/ transformation in production (versus absorption and adaptation, which are more directly covered in Output 2.1.3.). Therefore, for these packages, lead agencies will prioritize those communities where climate change and other factors may significantly reduce suitability for rice production (e.g., requiring greater use of inputs in order to maintain production, lower suitability due to unsustainably rising labor costs, etc.), such that activities under this output will enable smoother, phased, deliberate transitions. However, the selection of appropriate FFS packages will remain at the discretion of local communities.^[91]⁹¹

Local selection of appropriate and relevant FFS packages and modules will be guided by the initial core process of translating VRA results into LAPs. As noted above, this process will be conducted under the FFS delivery framework, so that there is a consistent framework for engaging communities and a smooth transition from LAP development to further FFS participation, CRIP proposals, etc. The LAP

process is built into the project's FFS delivery, based on the framework for establishing LAPs established under Output 1.1.2.

Because production transitions often rely on reaching a critical mass of producers in order to obtain minimum economies of scale (e.g., for inputs, suppliers, services, buyers, capital investments, technical assistance, contracts, bargaining), activities under this output will coordinate closely with activities under Component 3 (especially Outputs 3.1.1. ? 3.1.4.) in support of various forms of association and support among producers, especially to ensure that market-oriented diversification (vs. subsistence) is appropriately linked with relevant value chains, upstream and downstream.

Measures from TAPE (see Output 1.1.1. and M&E) will structure and provide feedback on the efficacy of these approaches and will help decision-makers understand and respond to linkages between on-farm practices and different dimensions of resilience (e.g., economic, biophysical).

Activities under this output will be undertaken in all five targeted provinces, but will be focused in Pursat, Siem Reap, and Kampong Thom, because those provinces are comparatively less commercially oriented in their rice production (e.g., higher proportions of smallholders, higher rates of poverty, better access to markets for diversified crops), and are therefore more likely to undertake and to benefit from diversification. These areas may also provide better opportunities for sustainable expansion of groundwater extraction (see discussion under Output 1.1.3.).

All relevant activities under this output will be conducted in close coordination with the Conservation Agriculture Service Center (CASC) of the Department of Agricultural Land Resources Management (DARLM), under GDA.

Indicative Activities:

- ? 2.1.1.1.: Link current and forecast AEZ, crop-suitability maps and other information in order to identify candidates for locally suitable diversification options in the targeted districts.
- ? 2.1.1.2.: Develop relevant business models for diversification of production and livelihoods.
- ? 2.1.1.3.: Develop relevant FFS packages, including TOTs and in local languages where appropriate.
- ? 2.1.1.4.: Deliver the TOTs and TOT refreshers.

The same execution arrangements apply to the four preceding activities. For project areas related to CPAs, this activity will be coordinated by GDLC while WCS will be the key partner for the implementation. For all other project areas, this activity will be coordinated by GDA and executed by GIZ .

Although this logical framework separates the development and delivery of different capacity-development approaches (e.g., FFS modules under 2.1.1., 2.1.3. 2.1.4., 3.1.1., etc.), these approaches will likely be combined for operational and budgetary efficiency during the project's delivery.

? 2.1.1.5.: Deliver the FFSs, including piloting diversification approaches with lead farmers and incentives for adoption and continuation.

In CPAs, this activity will be executed by GDLC in coordination with WCS. In all other targeted areas, this activity will be executed by GDA in coordination with GIZ. As above, it is anticipated that delivery of these FFS modules will be coordinated with delivery of the project's other FFS modules for operational and budgetary efficiency.

? 2.1.1.6.: Establish relevant CRIP criteria and procedures.

For CPAs, this activity will be coordinated by GDLC in partnership with WCS as key executing partner and other relevant partners. For all other target areas, this activity will be coordinated by GDA in partnership with GIZ as key executing partner. As above, it is expected that CRIP-related execution under Component 2 will be combined or harmonized with CRIP-related execution under Component 3.

? 2.1.1.7.: Select, fund, and support CRIPs.

Output 2.1.2.: Use of certified, premium, and stress-tolerant seeds increased.

Whereas Output 2.1.1. builds producers' climate resilience through crop-diversification, this output builds climate resilience for producers who continue to grow rice. (Of course, many farmers might both diversify *and* continue to grow rice.) In general, three overlapping attributes of rice seed affect growers' climate resilience: seed quality, variety, and stress-tolerance.

Certified seed is of higher quality (e.g., varietal purity, germination rates) than are saved seeds. Varietal purity is a primary determinant of price from buyers (along with variety, maturity, grain integrity, contamination, and moisture content) and germination rates directly affect yields.

Variety^[92]⁹² refers to the specific type of rice grown, which affects yields and demand. *Premium varieties* (e.g., fragrant rice, jasmine rice) have consistent market demand and garner higher market prices, leading to higher and more reliable income.

Stress-tolerant varieties are robust, tolerant, or otherwise adaptive to ecological stresses, many of which arise from climate change. For example, different varieties have appreciable tolerance^[93]⁹³ to drought, flood (inundation), certain pests or diseases, high temperatures, soil salinity, etc.^[94]⁹⁴ Other varieties mature at different times within a growing season, increasing flexibility for growers (e.g., in response to annual variations in beginning or end of the rainy season), or mature quickly, limiting their exposure to hazards. No single variety offers all climate-adaptive properties, so selecting the appropriate variety is highly dependent on context, including local hazards and risks, local market conditions (up-stream and down-stream), and individual farmers' priorities.

In PPG-phase consultations, various stakeholders—including farmers, AC officers, traders, processors, extension workers, researchers, and policy-makers—noted that the low varietal purity of paddy^[95]⁹⁵ is a critical limitation on farm-gate prices. However, many farmers are not convinced that certified seeds are worth the additional cost, that premium varieties will grow well or be readily saleable locally at sufficiently high price premia, or that stress-tolerant varieties will have sufficient market demand (especially based on cooking characteristics and flavor). Whereas this output addresses the specific concerns of farmers, Output 3.1.3. addresses some of the related value-chain limitations (especially regarding sufficient supply of certified and stress-tolerant seeds) and Output 1.1.4. improves financial stakeholders' understanding of the value of these seed varieties (i.e., capacity-development to increase their willingness to lend for certain varieties).

This output will be achieved via the following activities. First, in coordination with the project's FFS network, the project will work with local model farmers—especially including women-headed households when possible—to conduct local field trials that **demonstrate the benefits of supported varieties with the best potential for local up-take**. The selection of varieties will be participatory, based on local communities' selections arising from FFS training, augmented by advice from GDA, IRRI, CARDI, and extension services.^[96]⁹⁶ These demonstrations will directly address local communities' specific concerns about production of the selected varieties in the local context?e.g., favoring plots with typical or difficult soil conditions, rain-fed production, etc., and without use of atypical crop-management practices, inputs, etc. The primary aim of these demonstrations is to show that these varieties confer climate resilience in one or more ways compared to current common varieties, and that these benefits can accrue to any farmer, without reliance on expensive inputs, extensive crop-management, ideal soil conditions, irrigation, etc. Community-level discussions of the results of the demonstrations will be incorporated into FFS delivery under Output 2.1.3. By working with model farmers, the project will help demonstrate good crop-management practices, reduce the likelihood of poor demonstrations, and ensure that the results are locally credible. As needed and

appropriate,[97]⁹⁷ a portion of the budget for this activity may be used to provide project-related loss-insurance to participating model farmers.[98]⁹⁸

Second, the project will **produce associated training and promotional materials** for use by extension agents and ACs/CPAs, relevant value-chain actors (e.g., posters for seed sellers, brochures for lenders), and extension workers. When possible, these technical materials—including trainings and TOTs—will be distributed or conducted via the respective outputs associated with the project’s operational outreach and delivery. For example, training and materials for extension agents and ACs and producer groups including within CPAs, will be produced under this output and integrated into delivery of Outcomes 3.1.1. and 3.1.3. (and perhaps via 3.1.2. if materials specifically pertain to farming contracts). Likewise, relevant materials for lenders will be produced under this output and integrated with delivery and distribution under Output 1.1.4. (and potentially via Output 1.1.2.).

This output not only feeds directly into relevant FFS content and delivery under Output 2.1.3., but also links closely with the various network- and value-chain-development activities under Outputs 1.1.2. and 1.1.4., as well as with all of Component 3, especially Output 3.1.3. (supporting broader value chains). Additionally, activities under this output closely coordinate with execution of the project’s communication plan under Output 4.1.1. to produce communications materials for broader up-scaling—e.g., videos, farmer interviews, community reactions, etc.

Indicative Activities:

- ? 2.1.2.1.: Conduct local demonstrations of selected varieties via model farmers.
- ? 2.1.2.2.: Develop and produce associated training and promotional materials.
- ? 2.1.2.3.: Coordinate with CARDI and private sector to promote the use of premium and certified seeds.

Output 2.1.3.: Increased adoption of climate-resilient on-farm technologies and practices.

Activities under this output will increase the adoption of on-farm technologies and practices for climate-resilient livelihoods and improved management of water, soil, nutrients, and ecological services. Activities under this output will be particularly relevant to communities for which resilience may be built most efficiently by increasing absorptive and adaptive capacities rather than by facilitating transitions/ transformations. Given the prevalence of rice production in the targeted region, most activities in this output will focus on improving climate resilience in the context of rice production, though not exclusively. As with Output 2.1.1., activities under this output will be delivered via a combination of FFSs and CRIPs.

Via a participatory process, communities will select^[99] from a menu of packages with locally appropriate approaches for building climate resilience. As above (Output 2.1.1.), FFS packages will include a core module (CSA and gender) plus optional modules with packaged content to support local priorities for climate resilience, such as water-resource management (WRM), integration of application of climate advisory services and climate risk preparedness conservation agriculture, water-saving practices and technologies (e.g., AWD, household reservoirs, drip irrigation, electric pumps), integrated pest management (IPM), conservation agriculture, integrated nutrient management (INM), land-forming (e.g., land-levelling, laser land-levelling, Mangum terraces^[100]), technologies to reduce post-harvest losses (e.g., climate-proofed rice drying and storage facilities and combine harvesting machines), small-scale local infrastructure, small-scale mechanization options (e.g., direct-seeding; see Component 3 for value-chain investments in mechanization), and ICT tools for precision decision-making in crop nutrition, water management, pest management, smart-harvest scheduling, and standards alignment (e.g., AutoMon, Rice Crop Manager, Pest Risk Manager, EasyHarvest, and SRP's data-collection tool^[101]).

Nature-based solutions will be encouraged where feasible, such as the use of companion plants in ecological engineering schemes to support natural enemies and reduce pesticide needs, thereby reducing the ecological chemical load as well as input costs, labor requirements, and health risks while also increasing the biophysical absorptive capacity for novel pests.

As noted above, standards supporting climate-smart practices?SRP Standard (see Table 6)?will play an important role in providing the basis for market-based incentives for rice-producing communities in the Tonle Sap plain to adopt approaches that strengthen climate resilience. Therefore, at least one FFS package will specifically support communities in transitioning to standards-based production?e.g., CamGAP, SRP Standard (linked to Output 3.1.3.). It is expected that most communities interested in standards-based production will not be prepared for a full and immediate adoption of the selected standard, but rather will need to transition toward the standard.

The Royal Government of Cambodia (RGC) is committed to supporting CamGAP and SRP as bases for linking economic, social, and ecological dimensions of sustainability in rice production. Established production standards alone do not cover all aspects of resilience and adaptation, but act instead as market-driven platforms that facilitate linkages to ecologically beneficial approaches. For example, SRP buyers are piloting various forms of support to producers, including technical assistance. From the perspective of buyers, those investments are repaid via improved rice quality in the short term, as well as via sustainable supplies in the medium and long term. Therefore, capacity-development for meeting SRP Standard provides a ready mechanism for developing broader capacities toward agro-ecological resilience as well. As noted above^[102], this complementarity was confirmed during the PPG via an FAO study on the alignment of SRP and TAPE.

Table 6. Requirements and SRP Performance Indicators for SRP Standard (v2.1)

As with Output 2.1.1., all relevant activities under this output will be conducted in close coordination with CASC (in GDA's DARLM). For operational efficiency, CRIPs funding associated with this output will be administered under Output 2.1.1.

Indicative Activities:

- ? 2.1.3.1.: Develop relevant business models for supported practices.
- ? 2.1.3.2.: Develop relevant FFS packages, including TOTs and in local languages where appropriate.
- ? 2.1.3.3.: Deliver the TOTs and TOT refreshers.

The three preceding activities will use the same execution arrangements. For CPAs, these activities will be coordinated by GDLC in partnership with WCS as key executing partner in coordination with GDA, and IRRI. For all other project areas, these activities will be coordinated by GDA in partnership with IRRI as key executing partner. The various FFS content under Component 2 will be consolidated for efficient delivery (e.g., see Outputs 2.1.1. and 2.1.4.).

- ? 2.1.3.4.: Pilot climate-adaptive technologies and practices with lead farmers and offer incentives for adoption and continuation.
- ? 2.1.3.5.: Conduct exchange visit for farmers and community members under project areas and outside.

For CPAs, this activity will be executed by GDLC in coordination with GDA and WCS. For all other project areas, this activity will be executed by GDA in coordination with IRRI.

- ? 2.1.3.6.: Establish relevant CRIP criteria and procedures.

For CPAs, this activity will be coordinated by GDLC in partnership with WCS as key partner for implementation and with GDA, and IRRI. For all other project areas, this activity will be coordinated by GDA in partnership with IRRI as key partner for implementation.

Output 2.1.4.: Credit access for rice farmers improved.

Desk reviews and consultations in the PPG phase indicated that credit access for farmers—particularly via micro-financial institutions (MFIs)—in Cambodia is a fraught issue. In short, credit markets pose significant risks to many farmers due to their lack of financial literacy.

Credit markets in Cambodia have significantly over-heated in recent years (Figure 15). Cambodia is one of the three most saturated credit markets in the world (MIMOSA, 2015). In 2014, the average loan value from small-loan micro-finance institutions (MFIs) served about half of the nation’s borrowers and issued loans with an average value equal to 57% of the national median income per capita. Also in 2014, large-loan MFIs served 36% of borrowers and issued loans with an average value equal to 78% of the average annual income for the top 20% of earners. About 39% of rural households have loans.

Figure 15: Provincial Credit-saturation Ratings, 2008 – 2014



dark green = 1 (best); dark red = 6 (worst)

Source: <http://mimosaindex.org/wp-content/uploads/2015/11/MIMOSA-Report-Cambodia-1.pdf>

Although interest rates are legally capped at 18% APR, interviews during the PPG phase suggest that limit is not widely enforced. Many MFIs have increased loan fees to offset losses from the decreased interest rates (WB, 2019). Additionally, changes in loan tenor (increased repayment periods) have increased market saturation and risk of default, while delaying defaults.

Low financial literacy is the main household factor contributing to increasing risks in the micro-finance sector (World Bank, 2019). (The other factors are institutional.) For example, interviews with various stakeholders during the PPG phase indicated that prospective borrowers rarely provide a clear financial rationale or business plan, under-estimate needs for working capital versus fixed assets, and rarely rigorously prioritize their investments according to net returns on investment. Therefore, this output will improve farmers’ resilience and access to sustainable credit by improving financial literacy in targeted communities. Activities under this output will be conducted in coordination with related capacity development for agricultural cooperatives (ACs) and producer groups within CPAs under Output 3.1.1. The project will conduct an assessment of credit-related needs and risks—disaggregated by gender—in the targeted communities, which will serve as the basis for the development of FFS-based

technical assistance with accompanying materials and equipment as appropriate. The project will then deliver those FFS packages.

Activities under this output will also align closely with corresponding institutional capacity development under Outputs 1.1.4. and 3.1.1.

Indicative Activities:

- ? 2.1.4.1.: Conduct gender-disaggregated assessment of credit-related needs and risks.
- ? 2.1.4.2.: Develop FFS module, including materials and equipment as appropriate.

The two preceding activities will be executed by GIZ in coordination with GDA and GDLC.

- ? 2.1.4.3.: Deliver FFS packages for financial literacy.

In CPAs, this activity will be executed by GDLC in coordination with GDA and WCS. In all other project areas, this activity will be executed by GDA in coordination with GIZ.

Component 3: Scaling up adaptation technologies and practices in selected value chains through partnerships, markets, and investments.

This component will build on Component 2 (particularly pertaining to standards-based production, such as via SRP) to strengthen climate resilience by empowering farming communities and facilitating the flow of climate-resilience-based value in commodity value chains, particularly for rice. That is, this component will help generate economic value from climate-resilient and sustainable production approaches and ensure that producers are able to generate and capture their share of that value. Whereas Component 2 helps farmers improve on-farm approaches (technologies and practices) to increase the quality of their products, Component 3 facilitates stronger engagement between value-chain actors to enable farmers to capture that value and avail of other demand-driven incentives for sustainable production. Consultations with various stakeholders during the preparation of this project confirm that increased connectivity and engagement in the value chain builds trust, thereby increasing the willingness of different value-chain actors to invest in each other or allow slack in the value chain when needed. For example, increased trust leads some buyers to be more willing to invest in technologies, credit, infrastructure, technical support, inputs, services, wage labor, etc. for producer groups and communities. In this way, strengthened value chains reduce the load on governmental agencies to fund, arbitrate, and support low-trust value chains. Trust builds durability. To ensure timely and complementary with smooth supports, the planned activities will be in close coordination among key partners under the leadership of GDA and GDLC, ensuring proper follow-up.

As with Components 1 and 4, activities under this component also align with Cambodia's CBIT-supported efforts to harmonize CCA goal-setting, tracking, and reporting.

Outcome 3.1.: Scaling of adaptation innovations, technologies, and new markets, and scaling-up agribusinesses, employment, and empowerment at community level.

Output 3.1.1.: The performance of agricultural cooperatives improved via human capacity building.

Activities under this output will improve the performance of agricultural cooperatives (ACs) and producer groups within CPAs—including women's cooperatives and producer groups—via capacity development and financial support. In stakeholder discussions during the project's design, AC and CPA members and officers commonly noted needs for clearer understandings of the legal and policy constraints on AC operations, greater flexibility in the payout of shares (versus, e.g., saving for capital expenditures, allowing a buffer in working capital, etc.), strengthened governance frameworks (particularly in terms of standardization and training in establishing and ensuring good governance), business management (e.g., basic accounting, marketing, computer skills, record-keeping, contract negotiation, sourcing), lending^[103]¹⁰³, contract farming, business-model evaluation, support for standards-based production (e.g., facilitating adoption of SRP, CamGAP, organic standards, etc. or local establishment of compliance efforts, such as PGS or SRP Assurance Scheme^[104]¹⁰⁴), coordinating support for local adoption of climate-resilient technologies (e.g., technical assistance, financing options, operational support; CD materials for climate-resilient seeds developed under Output 2.1.2.), risk management, etc. Activities under this output will strengthen the performance of ACs and producer groups within CPAs by addressing prioritized needs.

ACs and producer groups within CPAs pursuing standards-based production aligned with SRP Standard under Output 3.1.3. may avail of SRP's Internal Management System^[105]¹⁰⁵ (IMS; for which TA is available) as part of the SRP Assurance Scheme, thereby assisting in the structuring of governance associated with compliance. Incorporation of IMS enables future SRP auditors to audit IMS data rather than individual producers, thereby reducing costs.

Supported ACs and producer groups within CPAs will develop medium-term business plans for increasing support to locally prioritized climate-adaptive approaches. These business plans can then be used to apply for project-based small grants. Business plans will be developed using the FAO RuralInvest tool. FAO RuralInvest is a free, multilingual method and toolkit for preparing sustainable agricultural, rural-investment projects and business plans. The tool was created to support any organization or project managing funds or mobilizing resources for small- and medium-scale agricultural and rural investment suited for: income-generating projects in agriculture, livestock, fisheries, fish farming, forestry, agro-industries, tourism, transport services, handicraft manufacturing, retail stores, wholesale services and storage services. Use of the tool will improve AC's to prepare high quality and bankable business plans.

Certified national trainers for RuralInvest will be established under FAO's global TCP project under CARD coordination. In coordination with CARD, the project will use this trainer pool to raise awareness of and expand use of the tool in the provinces. To accelerate innovation and financial inclusion, youth and women agri-entrepreneurs within the AC network will benefit from additional trainings, mentoring and knowledge exchanges based on the tool.

The project will favor support for AC proposals that align with LAPs and leverage local CRIPs, if any. These small grants will build on the selection criteria and protocols established for approving and administering CRIPs under Component 2.

ACmembers and producer groups within CPAs and officers also often noted the limited direct connectivity between ACs and CPAs. Therefore, pursuant to further stakeholder engagement during the AC and producer groups within CPA capacity needs assessment, the project will also identify and deploy solutions to strengthen the AC and CPA network (e.g., see potential app development discussed under Output 4.1.5.).

Indicative Activities:

? 3.1.1.1.: Conduct a capacity needs assessment for agricultural cooperatives in the target areas, identify distinct gap typologies or profiles (if appropriate), and propose capacity-building priorities.

? 3.1.1.2.: Develop capacity-building packages pursuant to the capacity needs assessment.

? 3.1.1.3.: Deliver TOTs and TOT refreshers.

The three preceding activities will be executed by GIZ in coordination with GDA in particular GDA's Department of Agricultural Cooperative Promotion and GDLC.

? 3.1.1.4.: Deliver capacity-building packages including RuralInvest to selected ACs and producer groups within CPAs including follow up and coaching support.

This activity will be executed by GDA and GDLC in coordination with CARD and GIZ.

? 3.1.1.5.: Strengthen the AC and CPA network.

This activity will be coordinated by GDA and GDLC in partnership with GIZ as key executing agency.

Output 3.1.2.: Contract farming models negotiated between agricultural cooperatives and rice processors demonstrated and up-scaled, incorporating crop insurance.

Activities under this output will facilitate and up-scale contract farming between ACs and producer groups within CPAs and buyers, particularly rice processors. Standards-based production (e.g., SRP, CamGAP, organic) creates a structured basis for the facilitation of farming contracts, supported by technical assistance. Activities under this output build on Output 3.1.1., which will develop selected ACs/CPAs' capacities to engage effectively in contract farming (e.g., training, documentation templates).

The project will work through strong, committed ACs and producer groups within CPAs to demonstrate and up-scale contract-farming arrangements. According to stakeholder consultations during the PPG phase, although contract farming is widely perceived as desirable by both producers and sellers, the largest barriers to expansion of contract farming are (i) lack of networking to match interested producers and buyers, (ii) mistrust (e.g., regarding contract breaches by both sides), (iii) changing contractual arrangements, and (iv), when contracts are linked to quality standards, insufficient technical support to producers to ensure clear understandings and to manage the transition.

Activities under this output will complement the project's other activities to address those barriers in multiple ways. The provision of technical support for activities under Component 2 will provide incentives for interest and provisional adoption of standards-based production by some farmers.^[106] Technical support to farmers will help ensure compliance with standards, resulting in increased yields and quality, which in turn generate increased income. Capacitation of ACs and producer groups within CPAs under Output 3.1.1. will facilitate clearer and more favorable contracts. Additionally, the project will assist ACs and producer groups within CPAs in negotiating with large buyers (e.g., Amru and Golden Rice) for buyer-supported investments in assets and equipment to meet buyers' quality standards?e.g., inputs, nurseries, equipment for sowing/ transplantation, sorting, cleaning, drying, storage, packaging, marketing, distribution, etc.

Alternatively, in the selected areas and when appropriate, organic- and/ or Fairtrade-certified rice value chains (in cooperation with relevant private sector actors such as Amru) or the successful IBIS Rice model^[107] will be replicated and scaled up. These models will allow farmers to reach niche markets with a high premium, and thus improve their income and livelihoods as well as preserving wildlife biodiversity, such as the critically endangered Giant Ibis (*Thaumatibis gigantea*), Cambodia's national bird. These value-chain linkages will correspond with other project-supported activities associated with standards-based production (e.g., compliance initiatives such as PGS or SRP's Assurance Scheme?see Outputs 3.1.1. and 3.1.3.). Subject to the funding from the GCF, this approach will be supported by the FAO's project 'Public-Social-Private Partnerships for Ecologically-Sound Agriculture and Resilient Livelihood in Northern Tonle Sap Basin (PEARL)', recently submitted to GCF, which?contingent on approval?may act as a significant basis of collaboration and co-financing for this activity.

Activities under this outcome will directly assist ACs and producer groups within CPAs and producer groups in engaging with buyers and processors to negotiate favorable contracts and supply adequate

technical assistance. In close coordination with activities 3.1.1.5 and 4.1.5.1, the project will organize business matching forums between ACs and producer groups within CPAs and potential partners, business tours to potential partners or successful ACs and producer groups within CPAs. The project will also fund or subsidize novel approaches to strengthening incentives for engaging in and fulfilling contracts, including trials for integrated climate-related crop insurance and formalized recourse options for breached contracts.

Activities under this output also link to the reputational and 'match-making' apps for which feasibility assessments may be conducted under Output 4.1.5. as well as with the provision of equipment under Output 3.1.4. (e.g., moisture meters to confirm rice quality upon contract fulfillment).

Indicative Activities:

- ? 3.1.2.1.: Assess lessons learned and best practices from recent standards-based contract farming.
- ? 3.1.2.2.: Facilitate and scale-up contract farming.
- ? 3.1.2.3.: Conduct trials for market-based, resilience-oriented incentives within contractual arrangements (e.g., climate-linked crop insurance, markets for climate-resilient crops and varieties).
- ? 3.1.2.4.: Formalize recourse options for breached contracts.
- ? 3.1.2.5.: Produce a white paper on opportunities to expand market-driven contract farming arrangements to additional climate-resilient approaches (e.g., linked to agroecological approaches).

Output 3.1.3.: Pilot locally prioritized standards-based production.

Building on assessments of the best opportunities for standards-based production (Output 1.1.1.), development of MAFF's capacity to support standards-based production (Output 1.1.4.), LAPs (Outputs 2.1.1. and 2.1.3.), increased demand for certified seeds (Output 2.1.2.), small grants to ACs and producer groups within CPAs (Output 3.1.1.), and evaluation of standards-based production options (3.1.2.), the project will support communities interested in pursuing standards-based production. It is anticipated that this may entail support for transitioning to adoption of SRP Standard 2.1, CamGAP, certified seed production,^[108] or organic standards. In the future and beyond the scope of the project, standards might be adopted by individual producers. However, in the context of this project and output, ACs and producer groups within CPAs will be the institutional basis for piloting local transitions to standards-based production.

In addition to the relevant technical assistance (TA) and investments provided via other outputs (as noted above and also including, e.g., Outputs 3.1.1., 3.1.4., and 3.1.5.), piloting will be supported under this output via the following two sets of activities.

First, the project will support the **increased decentralized production of certified seeds** in line with prioritized varieties under Output 2.1.2. (See Annex P for an overview of Cambodia's rice-seed supply chain, including levels of certification, current production amounts, pricing, and gaps.) This output's support for seed-multiplication and supply will entail several activities. In collaboration with CARDI, IRRI will (i) develop training materials^[109]¹⁰⁹ for GDA to use in training farmers' groups (ACs, in the context of this project, though the materials will be designed for use with other farmers' groups e.g. within CPAs), (ii) develop and deliver associated TOTs (including associated materials) for GDA and any relevant sub-national entities (as designated by GDA; e.g., provincial extension counterparts), (iii) develop one or more regionally appropriate business models for farmers and ACs and producer groups within CPAs to use in producing certified seeds, including a list of regionally appropriate packages of equipment for ACs and producer groups within CPAs (e.g., direct seeders, paddy dryers, moisture meters; links with Output 3.1.4.), and (iv) develop MAFF's institutional capacity to certify seeds at national and provincial levels. GDA will coordinate with relevant partners (especially GDLC, GIZ, and IRRI) to ensure that these capacity-development materials and activities align with those under Output 3.1.1., as well as with the work of WCS under this output (below).

Based on those developed materials and capacities, GDA will (i) utilize the aforementioned materials and trainers to train and provide technical assistance (TA) to ACs and producer groups within CPAs and farmers to produce, market, and sell certified seeds and (ii) procure (or produce) and distribute *foundation seeds* or *registered seeds*, as appropriate, to enable ACs and producer groups within CPAs to grow certified seeds. The purchase and provision of supporting equipment may be funded via small grants under Output 3.1.4.

Second, the project will **support ACs and producer groups within CPAs in adopting and implementing standards-based production and marketing**. These activities help ACs and producer groups within CPAs establish the institutional arrangements and market linkages to manage the transition to and continuation of sustainable, standards-based production.

For example, participatory guarantee systems (PGSs)^[110]¹¹⁰ play an important role in the institutional arrangements for standards-based production. PGSs empower farmers by developing networks that incorporate a range of value-chain actors around production standards and product quality. In the context of this project, PGSs link climate-resilience (in terms of practices, technologies, and outcomes) with market-based incentives for product quality and reliability. For example, SRP Standard creates a framework for facilitating technical assistance and adoption of climate-resilient practices that increase yields, quality, consistency, capacities, and profits, while decreasing costs, strengthening institutions, and reducing agricultural threats to ecosystem services. The PGS framework provides an interim basis for buttressing the transition to full certification.

FFSs and PGSs both serve as mechanisms to develop value-chain networks around standards-based production. That wider network includes seed suppliers, credit providers, service providers (e.g., crop management, harvest and post-harvest, storage), traders, and processors. Given that the transition to

certifiability under most standards (especially for international markets) takes significant time and commitment on the part of farmers, and that certifiability is distinct from certification, PGSs will function in the context of this project as an interim step toward potential certification. Even when certification is not sought, PGSs help provide a quality-assurance mechanism for local markets, thereby helping standards-based producers secure price premia for their efforts (especially when the full value of the standards is not readily evinced by the product itself). PGSs also build social capital in support of the on-farm practices promoted under Component 2.

Based on WCS's extensive experience and networks associated with supporting standards-based, ecologically sensitive production in Cambodia, WCS will coordinate with GDA and GDLC to (i) develop training materials¹⁰⁶ for GDA to use in training farmer groups after the project, (ii) develop and deliver associated TOTs (including associated materials) for GDA and any relevant sub-national entities (as designated by GDA; e.g., provincial extension counterparts), (iii) develop one or more regionally or locally appropriate institutional structures that farmers' organizations may customize (including structure, governance arrangements, outlines of key processes, useful forms, etc.), and (iv) ensure that these approaches harmonize with the projects broader efforts to strengthen MAFF's institutional capacities to support standards-based production (additionally coordinating with GIZ's activities under Output 1.1.4.^[111]¹¹¹). WCS will also deliver the associated training and local technical assistance to establish PGSs involving up to 100 communities, based on the interest and requests of communities and in line with their LAPs. WCS will conduct this work in coordination with GDA, GDLC, and designated sub-national counterparts so that they will each be fully capable of continuing their respective roles in support of PGSs after the project's conclusion.

GDA, GDLC, IRRI, and WCS will individually and jointly ensure that materials and operational delivery explicitly target the inclusion, empowerment, and benefit of women and members of vulnerable groups as much as possible, including tailoring of content and delivery as appropriate. These considerations and efforts will extend to the institutional, procedural, and governance arrangements associated with these activities (e.g., distribution of benefits from certified seeds, roles in PGS, etc.).

The associated experiences of ACs, farmers, local communities, and producer groups within CPAs and relevant value-chain actors will be captured via the project's communication plan in order to create multi-media products to facilitate broader up-scaling, both domestically and internationally.

Indicative Activities:

- ? 3.1.3.1.: Develop materials to train farmers' groups to produce and market certified seeds.
 - ? 3.1.3.2.: Develop and deliver TOTs to GDA for production and marketing of certified seeds.
 - ? 3.1.3.3.: Develop regionally appropriate business models and equipment packages for production and marketing of certified seeds.
 - ? 3.1.3.4.: Develop MAFF's institutional capacity to certify seeds at national and provincial levels.
-

The four preceding activities will be executed by IRRI in close coordination with GDA

? 3.1.3.5.: Train and provide technical assistance to ACs and producer groups within CPAs to produce and market certified seeds.

? 3.1.3.6.: Procure (or produce) and distribute foundation or registered seeds to designated ACs and producer groups within CPAs.

These two preceding activities will be executed by GDA.

? 3.1.3.7.: Develop and deliver TOTs to GDA on establishing local institutions to support standards-based production and marketing.

This activity will be coordinated by GDA and GDLC in partnership with WCS as key executing partner.

? 3.1.3.8.: Develop materials and deliver training and technical support to farmers? groups to adopt standards-based production and marketing.

This activity will be executed by GDA and WCS.

Output 3.1.4.: Investments in local climate-adaptive equipment, facilities, and activities funded.

This output supports direct investments in the climate resilience of local value-chain assets and activities, particularly for ACs and farmer groups under CPAs. These purchases will be aligned with LAPs and will largely target assets to enable and climate-proof local commercial production, such as for production, post-harvest processing (e.g., drying, storage), value-addition, etc. For example, the project may support purchases associated with the production and marketing of certified seeds (see IRRI-developed equipment packages under Output 3.1.3.). In order to prioritize locally appropriate investment options, the project will undertake technology needs assessments in the targeted communities. The project will identify financing options to magnify the project?s contribution and ensure a portion of community investment, such as via CIPs, DIPs, CRIPs, concessional wage labor, loans/ credit, partial payment, etc. ACs/CPAs or other small or medium enterprises (SMEs) will submit proposals for the project-supported purchase of equipment or asset improvements, indicating the mix of funding that will be used (e.g., potentially combining funding from AC funds, private-sector, other development projects, community-members? concessional wage labor for transport and installation, CIP/ CDP funds, and the project). The project will support/ fund/ provide appropriate

training on operation and maintenance, as appropriate. ACs will also submit their plans to ensure adequate coverage of related on-going operation and maintenance costs.

PPG consultations indicate that many ACs and other farmer organizations including within CPAs would benefit from post-harvest handling equipment, seeders, collection equipment, improved storage facilities, dryers, and equipment to verify rice quality upon delivery to buyers (e.g., moisture meters).

Additionally, the project will provide small grants to ACs and producer groups within CPAs seeking working capital to implement activities in line with a LAP (Output 2.1.1.) or the AC's and producer groups within CPA's medium-term plans for strengthened climate adaptability (Output 3.1.1.). For example, these small grants may enable ACs and producer groups within CPAs to capitalize savings and loan groups. These small grants will be awarded on a competitive basis in line with selection criteria associated the project's other small-grants activities (e.g., CRIPs).

Indicative Activities:

? 3.1.4.1.: Conduct a technology needs assessment for ACs and producer groups within CPAs in targeted communities.

? 3.1.4.2.: Identify financing options for the funding of supported technologies and asset improvements.

? 3.1.4.3.: Deliver climate-adaptive technologies and assets to ACs and producer groups within CPAs in targeted communities based on approved proposals.

? 3.1.4.4.: Provide small grants to ACs and producer groups within CPAs for climate-adaptive activities based on approved proposals.

Output 3.1.5.: Credit availability for rice processors improved.

Activities under this output will improve access to credit for rice processors in collaboration with ARDB, the IFAD AIMS project (including its Value Chain Innovation Fund), and local MFIs. The project will explore the barriers of high interest rates and banks' hesitance to lend to agricultural borrowers due to the perception of high risk. The project will also explore the use of blended finance and bank loan guarantees as potential solutions. This will allow for expansion and climate-proofing of post-harvest handling, collection, storage, and drying facilities (with the SRP Standard as the benchmark), while also allowing for processors' timely purchasing of paddy rice from farmers, thus facilitating socially and environmentally sound contract farming and reducing side-selling. The project will provide risk assurances for piloted credit options.

Indicative Activities:

? 3.1.5.1.: Conduct a risk and needs analysis of the credit market for agricultural processors in the targeted area.

? 3.1.5.2.: Develop packages of options to address identified risks and needs.

? 3.1.5.3.: Pilot credit packages with project-supported risk assurances for rice processors in the targeted area.

The project-supported packages will primarily target short-term credit to ACs and FAs, and producer groups within CPAs such that non-expended risk assurance funds are reprogrammed to CRIPs over the final 12 months of the project (Output 2.1.1.). No back-flows to the LDCF project are associated with these risk assurances.

Component 4: Building effective knowledge management, innovations, and monitoring & evaluation systems.

This component establishes the structures and processes for the project's delivery, ensuring effective knowledge management and transitional arrangements for long-term durability and scaling-up of results. Activities under this component will ensure efficient and effective systems of coordination among key project implementation partners for project delivery, conduct M&E for the project, strengthen capacities in governmental operational partners (in line with operational partner assessments), link the project's M&E with broader KMS, and support knowledge-sharing nationally and internationally.

Outcome 4.1.: More effective knowledge management and assessment of adaptation innovations.

The primary outcome of this component is that stakeholders will clearly understand the successes, misses, and best practices from the project's innovative CCA approaches so that these approaches can be further adapted, supported, and adopted for up-scaled climate resilience. Stakeholders will benefit from knowledge management approaches and technologies that link (i) the project's progress and results (tracked via the project's M&E plan) with (ii) stakeholders' broader and post-project decision processes.

Output 4.1.1.: Project management mechanisms established.

Activities under this output will facilitate effective coordination among stakeholders, ensure on-going stakeholder engagement, distill and disseminate lessons learned, and strengthen the project-management capacities of the project's operational partners.

The project's stakeholder engagement plan will be updated and further elaborated during the inception phase in order to ensure appropriate inclusion of relevant stakeholders (including governmental agencies, academic/ research institutions, private-sector actors, local communities, vulnerable groups, women, CSOs, NGOs, and international organizations). As part of the stakeholder engagement plan, activities will be conducted in order to monitor and address emergent issues related to gender equity and vulnerable groups. The stakeholder engagement plan aligns with and facilitates execution of the gender action plan. The stakeholder engagement plan will also ensure that the project complies with guidance on Free Prior Informed Consent by, *inter alia*, documenting participating communities' early and on-going engagement and consent.

Activities under this output will also update and execute the project's communication plan, which provides transparency and ensures that all stakeholders are aware of the project's progress and achievements. The communication plan includes establishment and maintenance of a project website, which will be hosted on MAFF's web domain and integrate with relevant platforms hosted by MAFF, MoE, and other stakeholders. The website will provide regular updates on the project's partnerships, operations, progress, achievements, tools, publications, plans, and opportunities for public engagement. The website will also contain links to the project's grievance mechanisms. Relevant tools, lessons, documentation, and other communications will be produced via appropriate channels, (e.g., videos, fact-sheets, brochures, flyers, signage, policy briefs, reports, press releases, and other publications, but excluding training materials, which are covered under respective components). The communication plan and M&E plan will coordinate to produce photos, videos, remote-sensing imagery, and other documentation that, under the communication plan, will be edited and packaged for appropriate public relations materials targeting various stakeholders. The project's lessons learned will be distilled (based on information collected primarily via the project's M&E plan; Output 4.1.2.) and disseminated via appropriate channels (e.g., inter-sectoral coordination fora, project stakeholders, press releases, interviews, and project workshops). The project will also explore opportunities for dissemination through radio and television broadcasts. The project will ensure that communications target all relevant stakeholders, with particular emphasis on facilitating up-scaling effective approaches.

The project will strengthen project-management capacities in line with Operational Partner assessments and agreements. During the inception phase, the PMU will coordinate with GDA, GDLC, and FAO to draft the project's operational execution manual. The project will also fund third-party spot-checks and other assurance activities for operational partnerships.

Indicative Activities:

- ? 4.1.1.1.: Execute and update the project's stakeholder engagement plan.
- ? 4.1.1.2.: Execute and update the project's communication plan.
- ? 4.1.1.3.: Develop capacities, facilitate delivery, and execute mitigation measures pursuant to Operational Partner assessments and agreements.
- ? 4.1.1.4.: Conduct spot checks and other assurance activities for operational partnerships.

Output 4.1.2.: Tools, methods, and approaches for monitoring and tracking project progress adopted.

Activities under this output enable well informed management of the project and facilitate integration with stakeholders' broader knowledge-management systems and decision processes. This output will also expand the evidential basis for the integration of market-based and ecosystem-based approaches to building climatic resilience in agriculture, particularly at landscape scale.

The project's knowledge-management approach will harmonize and integrate across resilience concepts, measures, levels, geographies, and interventions. During the PPG phase, FAO's climate adaptation tracking framework was used to identify and prioritize vulnerabilities. During implementation, monitoring systems will capture adoption of on-farm practices through FFS feedback combined with tracking of progress toward production practices that align with selected standards (especially CamGAP and the performance indicators for the SRP Standard^[112]) and progress on broad resilience dimensions (via TAPE). It is expected that just as production standards (e.g., CamGAP, SRP Standard) provide a starting point for adoption of resilient on-farm practices that can be broadened to more comprehensive dimensions of resilience via adoption of agro-ecological practices, so too do corresponding measures (e.g., performance indicators) provide a basis for expanding to broader measures of resilience, such as via TAPE.

The project will develop a cloud-based KMS and app-based data collection system to collect and process farm-level and other data for monitoring and reporting against GEF-7 CCA indicators and other reporting frameworks, such as for regional and global initiatives. Because the apps will also geo-tag and time-stamp the data at the point of data collection, decision-makers will also be able to filter or extract spatially specific datasets, potentially on a wide range of variables of interest, potentially including soil quality, pollution, groundwater conditions, and biodiversity.

TAPE (including any additional frameworks; e.g., FAO's climate-adaptation tracking framework) and SRP Standard's performance indicators may be combined for operational delivery on a single cloud-based platform, such as ICRISAT's MEASURE. Although, as described above, FAO has piloted TAPE in Cambodia on the Kobo platform, FAO has been working with ICRISAT to develop a MEASURE-based platform for several related regional projects (especially associated with SRLI, FOLUR, and LDCF) in order to facilitate data comparability and improved regional coordination and learning. In short, decision-makers will be able to see incoming evidence on how the SRP's market-oriented approach to resilience is interacting with an agroecological approach to resilience as captured via TAPE. The KMS will enable decision-makers to understand the respective benefits and trade-offs in a geographically specific way. This multi-faceted, multi-level, integrated approach will allow decision-makers a detailed sense of how best to ensure continuous improvement (i.e., what is working, what isn't, and what the multivariate effects are) and what to share as best practices.

In addition to KMS aspects pertaining to the project's M&E and stakeholders' broader KM approaches, the project will also assess the feasibility of tools and approaches to track farm-specific progress toward relevant sustainability criteria and production standards (e.g., CamGAP, SRP Standard). The intention is to develop a system that facilitates useful information collection and

sharing between value-chain actors. For example, an SRP buyer might be able to monitor which supplier communities are lagging in progress, and thus respond efficiently with technical or other assistance.

Given potential concerns about data privacy and protecting producers' interests, it is important to conduct a thorough feasibility assessment before potentially developing such a tool.^[113] Therefore, this project will coordinate with other regional SRP partners to explore this possibility and conduct a feasibility study in the Cambodian context. The study will benefit from feedback from relevant SRP stakeholders (e.g., regarding concerns, opportunities, blind spots, etc.) as producers transition to SRP. Ideally, such a tool would also be able to be expanded to facilitate record-keeping, traceability, integration with certification or PGS, or other functions that add value in associated value chains.

The integrated system will produce several benefits. First, it will establish a knowledge base for actors at different levels to understand whether and how the project's interventions are contributing to farming system outcomes at different levels. Second, it will allow decision makers at different levels (e.g., farmers, extension workers, PDoE at landscape level, PDAFF at AEZ level, MoE and MAFF at national level, etc.) to access information relevant to their respective roles and thereby develop an understanding of system risks and vulnerabilities as well as the effectiveness of different measures over time. Third, it will provide a feedback mechanism and adaptive learning tool that can allow for periodic input from technical experts to engage with beneficiaries at different levels to suggest different measures and alternative approaches to improve system performance.

For example, a governmental official who has been trained to collect data for monitoring via TAPE could, under the project scenario, enter collected data into a customized, app-based collection module that is directly linked to the ICRISAT-designed database, from which that information could then be processed to inform users at national levels who want to understand how projects are contributing to GEF-7 LDCF program indicators, SDGs, NDC targets, NC CCA targets, etc. This process would be automated in the system once established. This general approach has been modelled via the Integrated Soil Crop System Management (ISSM) program in China.^[114]

Indicative Activities:

? 4.1.2.1.: Develop a knowledge management system that facilitates execution of the project's monitoring and evaluation plan.

? 4.1.2.2.: Execute the project's monitoring and evaluation plan.

? 4.1.2.3.: Conduct a feasibility assessment for tools and approaches to track farm-specific progress toward relevant sustainability criteria and production standards (e.g., SRP).

Output 4.1.3.: Project's KMS integrated with national results-tracking for agricultural CCA.

This output ensures that the project's KMS is integrated with Cambodia's national results-tracking for agricultural CCA. It is expected that the project's KMS will build upon a customized version of ICRISAT's MEASURE tool (see Output 4.1.2.), such that ICRISAT will be best positioned to support this technical assistance. Thus, in collaboration with GIZ's related work under Output 1.1.1., this output strengthens capacities within MAFF and MoE to measure, track, interpret, report, and use resilience-related indicators in the agricultural sector in line with RGC's commitments and targets (e.g., NDC, NCs, BURs). As noted under Outcome 1.1., these activities will be closely coordinated with the FAO-supported GEF CBIT project currently under implementation: "Strengthening Capacity in the Agriculture and Land-use Sectors for Enhanced Transparency in Implementation and Monitoring of Cambodia's Nationally Determined Contribution (NDC)"^[115]¹¹⁵.

Indicative Activity:

? 4.1.3.1.: Integrate the project's KMS with MAFF and MoE initiatives at national and sub-national levels to track CCA priorities in accordance with RGC's commitments and targets.

Output 4.1.4.: Inter-regional knowledge-sharing fostered.

This output ensures that the project benefits from and shares best practices with other similar projects and initiatives internationally, particularly those associated with SRP, SRLI, FOLUR, and climate-resilient agriculture.

Indicative Activity:

? 4.1.4.1.: Support engagement with relevant international platforms, projects, and initiatives.

Output 4.1.5.: Innovation and new market opportunities fostered.

Activities under this output build on Output 1.2, Component 3, and the project's stakeholder engagement strategy by supporting additional network collaboration and exploration of novel market opportunities. During the PPG, various stakeholders in agricultural value chains noted inefficiencies due to a lack of understanding of and interaction with other members of the value chains. For example, farmers, producer groups including within CPAs and ACs often have a limited understanding of buyers' priorities, and vice versa. To help address this issue, the project will host provincial multi-stakeholder workshops to foster value-chain-related networks in order for stakeholders to gain better understandings of priorities, challenges, constraints, suggestions, needs, and innovations emerging

from different actors. These workshops provide an excellent opportunity for various stakeholders to share their perspectives, discuss challenges, and present best practices, including the project's successes.

The project will also support a feasibility study, including relevant stakeholder consultations, for at least one app-based solution to resilience-oriented challenges posed by stakeholders. For example, contract farming and agricultural lending are both currently negatively affected by a lack of reputational tracking. For example, in contract farming, failure by either party to honor the contract results in a reputational penalty primarily for the actors involved. There are few reputational benefits for honoring contracts (even at personal cost) and few reputational costs for breaches. Widespread mistrust limits interest in contract farming and imposes a hidden cost on contracts while trust is built. Similarly, in agricultural lending, non-local lenders are unable to differentiate between the credit-worthiness of potential borrowers, leading to inflated pricing of loan risks. Borrowers are unable to demonstrate their credit-worthiness.

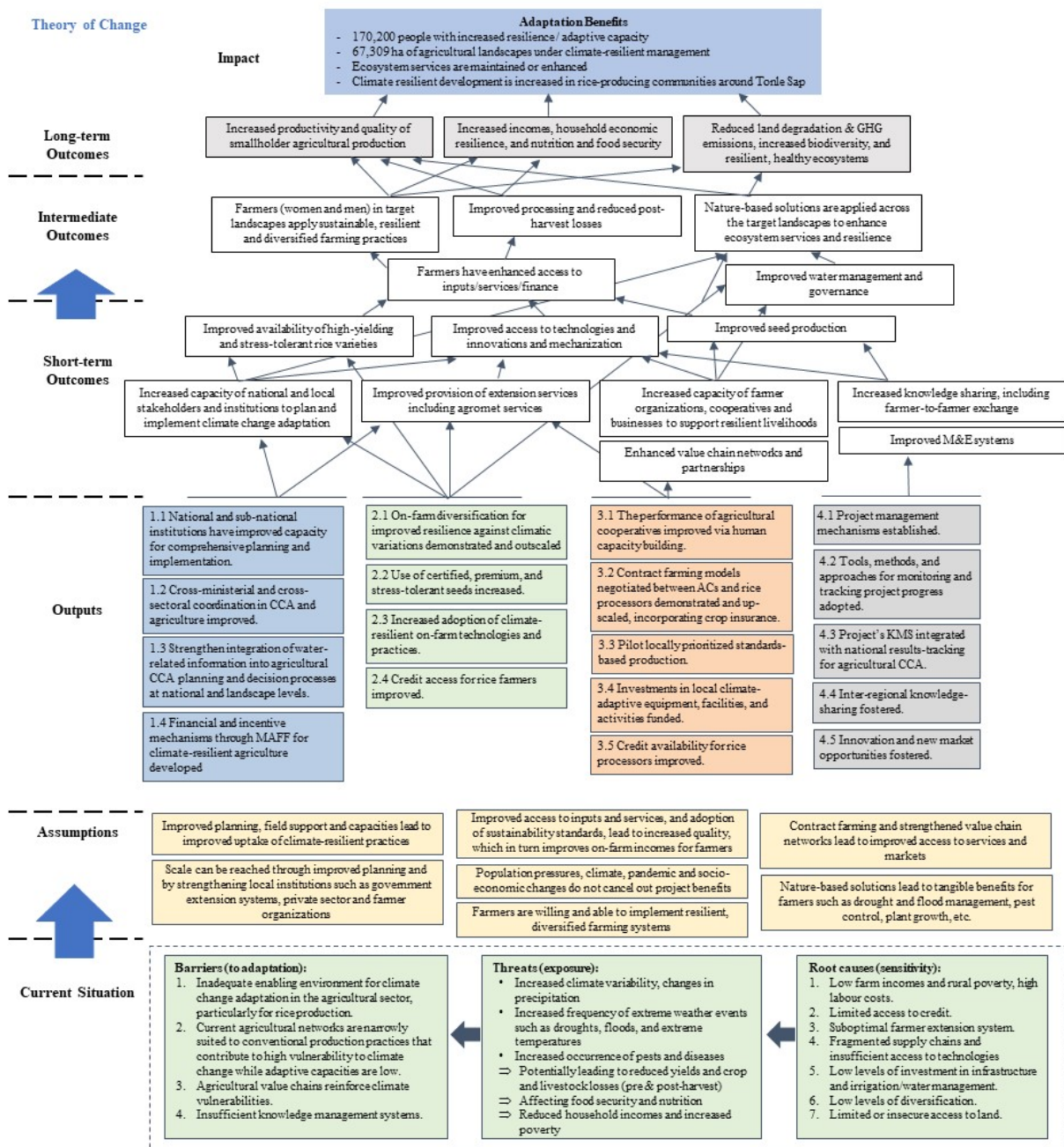
Therefore, one option for such a feasibility study is the development of an agricultural value-chain app that allows producer groups (e.g., ACs) and buyers to register and rate the performance of farming contracts. In this way, producer groups and buyers could accumulate feedback and ratings. This creates an incentive to honor contracts and build a good reputation, thus building trust and reducing hidden transaction costs in the value chain. Similarly, if the app were configured for lending, lenders would have a better basis for pricing loan risks, borrowers could have a means to build and demonstrate credit worthiness, etc.

Another option would be an app that builds on Output 3.1.1. to strengthen the network of ACs and producer groups including within CPAs. Other, more appropriate options may be identified in the course of implementation. Whichever option is pursued, an assessment of governance considerations will be key in the feasibility study, as it will likely be important for any such app or process to have third-party mediation or arbitration, given that users' rating incentives might sometimes be in tension (e.g., producers down-rating buyers as negotiating leverage).

Indicative Activities:

- ? 4.1.5.1.: Host provincial multi-stakeholder workshops to foster value-chain-related networks.
- ? 4.1.5.2.: Conduct at least one feasibility study for an app-based solution to increase stakeholders' climate resilience.

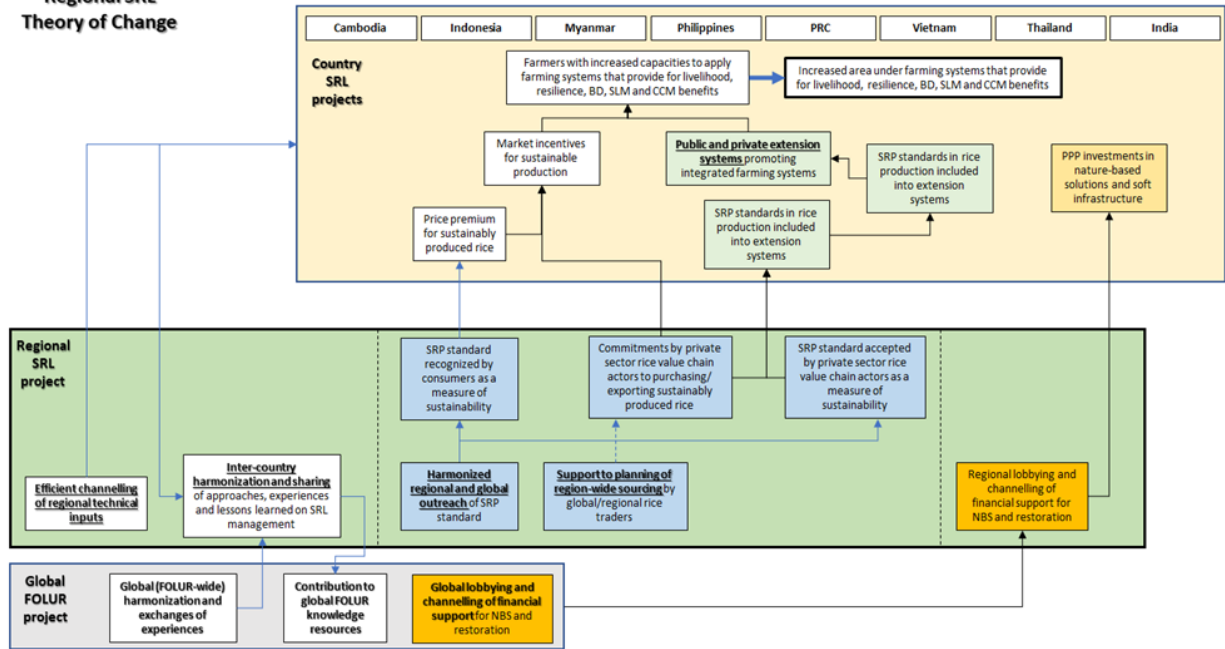
Figure 16: Project theory of change



This project also fits into a broader theory of change as part of the regional initiative for sustainable rice landscapes (SRL), as depicted in Figure 17.

Figure 17: Theory of Change for the Regional Initiative for Sustainable Rice Landscapes

Regional SRL Theory of Change



1.a.3. Alignment with GEF focal area and/or Impact Program strategies

The proposed project is directly aligned with the overarching goal of the **LDCF/SCCF Programming Strategy 2018-2022**, through its efforts to strengthen resilience and reduce vulnerability of Cambodian communities to adverse impacts of climate change. In response to the enhanced emphasis on private sector engagement in the LDCF strategy, the project is promoting an ecosystem-based and market-driven approach to build resilience in production landscapes and to strengthen the adaptive capacities of local private sector, ACs, and producer groups including within CPAs and other SMEs^[116]. The project's alignment with two of the three objectives of the LDCF strategy and consequent adaptation benefits are outlined below.

LDCF Objective 1: Reduce vulnerability and increase resilience through innovation and technology transfer for climate change adaptation. The project will reduce vulnerability and increase resilience of 37,000 households (approximately 170,200 people) and 67,309 ha across five targeted provinces by promoting the use of socially and environmentally sound contract farming, SRP certification, and agricultural diversification. These innovative approaches will create incentives for farmers, producer groups including within CPAs, ACs, and other SMEs to engage in climate-resilient practices such as the use of climate-tolerant seeds by providing a market for rice that has been produced in compliance with strict production standards. In terms of technology transfer, the project will promote a greater uptake of climate technologies that improve climate resilience in rice production and processing, such as mechanical seeders to increase yields, climate-proofed rice drying and storage facilities to reduce post-harvest losses, and ICT tools for more climate-resilient decision-making in crop management, pest management, water management, and smart harvest scheduling. The transfer and dissemination of climate technologies for vegetable value chains will also be promoted. Critically, local communities will lead the process of prioritizing, selecting, and integrating locally appropriate climate-resilient technologies.

LDCF Objective 2: Mainstream climate change adaptation and resilience for systemic impact. At the rice farm and processing levels, adaptation and resilience will be mainstreamed by encouraging compliance with the SRP Standard, which contains a range of resilience measures. At the community level, efforts will also be made to support the integration of community-based adaptation plans into the commune investment and development plans. At the national level, the project will strengthen the capacity of national institutions (particularly MAFF) to integrate climate change actions into their programming, as well as to participate proactively in the integration of agricultural priorities into climate-related strategies. At the regional level, lessons learned from the project will be disseminated via communications material, encouraging uptake of successful practices in other projects. The project is also expected to contribute to strengthening regional and global partnerships, innovations and knowledge-sharing through its engagement with the SRP. Furthermore, the project will seek to improve a number of enabling conditions for climate change adaptation in the rice sector, including integrated water management, and national and provincial capacities in weather forecasting, agro-met services and early warning systems, as well as through diversification strategies. Cross-ministerial and cross-sectoral coordination in climate change adaptation and agriculture will be improved by taking stock of the achievements of the Cambodia Climate Change Alliance (CCCA) and collaborating with CCCA to target gaps.

Alignment with GEF focal areas

In addition to the adaptation benefits outlined above, the project will also generate co-benefits that contribute to the GEF focal areas of the **GEF-7 Programming Directions**.

Regarding land restoration and biodiversity, the project will help to improve food production and livelihoods through sustainable land management by promoting sustainable rice-cultivation practices and crop diversification. The project will also reduce pressures on natural resources from competing land uses and increase resilience in the wider landscape. By increasing rice farmers' net incomes, the project will reduce pressure on nearby protected areas, thus reducing deforestation and contributing to wildlife conservation, including habitats of the critically endangered Bengal florican (*Houbaropsis bengalensis*). The project will be especially beneficial to biodiversity in and around the project's activities in community protected areas (officially recognized settlements and agricultural production areas inside protected areas). The project will also help to conserve and promote the sustainable use of agro-biodiversity through diversification and uptake of climate-resilient crops and (especially) rice varieties, thereby contributing to the ecological integrity and sustainability of the Tonle Sap ecosystem.

Regarding climate change mitigation, the project is expected to lead to reduced methane emissions from paddy fields through introduction of technologies for improved management of water and organic inputs. Accordingly, the PMU will consider integrating FAO's ExACT value-chain tool. The project will also help to enhance water security in the Tonle Sap freshwater ecosystem through improvements in land management (e.g., improved infiltration, reduced erosion, reduced leaching of inputs) and information for improved water-resource management. Finally, the project will contribute to strengthening the sound management of agricultural chemicals via promotion of integrated pest management and the correct use of fertilizer.

1.a.4. Baselines, incremental cost reasoning, and additionality

This section relies on the following definitions.

Co-financing: financing that is additional to GEF Project Financing, and that supports the implementation of a GEF-financed project or program and the achievement of its objective(s) ^[117]¹¹⁷

In the context of LDCF, co-financing is the sum of costs that would be incurred under business as usual. ^[118]¹¹⁸

Incremental costs: LDCF funding of climate-adaptations beyond the business-as-usual case

Additionality: ?additional benefits that are attributable to the GEF?[119]¹¹⁹

Recurrent expenditures: funding for on-going operations (e.g., compensation, cost of capital, depreciation), excluding acquisition of fixed assets and, in the case of governments, development budgets[120]¹²⁰

Investment mobilized: ?the sub-set of co-financing that excludes recurrent expenditures?[121]¹²¹

In the baseline scenario, Cambodia faces increasing vulnerability to climate change, including in its efforts to increase rice production. Low capacity and insufficient access to technologies, compounded by an inadequate policy environment, keep producers in a situation of high vulnerability to climate risks and hazards, and lead to a gradual decline in agricultural-based livelihoods. Without the LDCF intervention, Cambodia's agricultural sector will increasingly suffer under the impacts of climate change. Agricultural production and livelihoods, particularly the majority of smallholders in rural areas, will remain impacted by a variety of climate hazards.

Without LDCF funding, private investment to support smallholder producers, producer groups including within CPAs, ACs, and SMEs in the forms of technology transfer, contract farming arrangements at scale, etc. is currently unlikely due to the investment risk involved (at least in the short-term, given coordination problems and prevailing insecure property rights). Because of the small size of landholdings and high levels of poverty in the target provinces, farmers currently do not have the resources to climate-proof their agricultural practices and businesses without external support. Given Cambodia's status as a least developed country, the available public budget to support the types of activities envisioned in the project is limited.

The project will not take place without involvement of the LDCF. Other key donors supporting agricultural development are focusing their support on initiatives for which climate change issues are subordinated to other priorities?e.g., food security, value chain development, and rural finance. This project complements baseline initiatives by enabling direct incremental investments in climate-adaptive technologies, capacities, and assets for vulnerable rice-growing communities in the Tonle Sap basin.

Table 7 expands on the overview of co-financing provided in Part I Section C by describing the specific sources and additionality associated with the project's mobilized investments for co-financing.

Table 7: Mobilized Investments and Additionality

Donor/ Implementing Agency	Project name	Baseline project description	LDCF additionality	Investment Mobilized (\$)
FAO	FAO/EU CAPFISH Capture Fisheries	Part of the EU-funded Cambodia Programme for Sustainable and Inclusive Growth in the Fisheries Sector. FAO is implementing Component 1 of the complementary support, which strengthens management, conservation, and control systems in Cambodia's inland and marine fisheries, in the context of the collaborative management approach adopted by Cambodia as part of the on-going decentralization process.	The project will deliver climate-adaptive additionality by building on CAPFISH's technical assistance and investments to build national, sub-national, and local capacities to integrate diversified livelihoods into rice-based production systems, such as through rice-fish systems (Component 2). Local communities may also propose to use CRIP funds to build relevant, climate-adaptive supporting infrastructure. Where locally relevant, the project will strengthen capacities and functionality of community fish refuges (CFR), which play crucial role in the rice field fisheries (e.g., CRIP-funded farm ponds). The project will work in coordination with CAPFISH to mainstream climate resilience into the CFR, and rice-field fisheries.	4,000,000
	Technical support for institutional and capacity enhancement on gender-sensitive fisheries management and conservation - TCP/CMB/3705	This project will identify the role, challenges, and contributions of women and men to sustainable fisheries management and to develop Good Gender and Child Labour Practices for Fisheries.	The results from this project will inform and guide the implementation of the LDCF project.	300,000

<p>TCP/CMB/3803: Strengthening institutional and technical capacity for safe food through implementation of food safety measures and certification schemes for agricultural products in Cambodia to combat COVID-19?</p>	<p>This project will support GDA and related MAFF departments to implement Good Agricultural Practices (GAP) guidelines especially Cambodian GAP (CamGAP) PGS, Certified Organic Products, the international Codex standards and other voluntary standards for all stages of agricultural value chains including promotion of pesticide labelling and good practices to optimize farm-level use to keep food safe, of good quality and suitable for trade.</p>	<p>The LDCF funding will replicate the models developed under this project (component 3), particularly with objectives to increase income from better quality production resulting from adoption of GAP, voluntary standards through PGS, garnering higher farm-gate prices.</p>	<p>300,000</p>
<p>Support to agriculture sector strategic review and development towards 2030 and 2050</p>	<p>This project will support the review of priority agricultural sector policy and consolidate priority actions for effective advocacy and resource mobilization toward 2030 and 2050, development of E-agriculture strategy, and preparation of Chapters on Water; Land Use and Soil Quality to be included in the 2020 State of Environment (SoE) Report of Cambodia</p>	<p>The results from the agricultural sector policy review along with priority actions will inform LDCF project activities particularly component 1. The LDCF project would also harness the digital innovations to improve agricultural value chain and traceability. The Chapters on Water; and Land Use and Soil Quality will inform LDCF investment in improved water and soil management practices to increase farm resilience.</p>	<p>300,000</p>

<p>Support Programme on Scaling-up Climate Ambition on Land-use and Agriculture through NDCs and NAPs (SCALA)</p>	<p>The project will support transformative climate action in the land-use and agricultural sectors to reduce GHG emissions or enhance removals, as well as strengthen resilience and adaptive capacity to climate change in participating countries. Its specific objective is for countries to have translated their NDC or NAPs into actionable and transformative climate actions in land-use and agriculture with multi-stakeholder engagement. It emphasizes collaboration between the public and private sectors to drive implementation.</p>	<p>Results from SCALA?e.g., information and assessments used by national stakeholders to identify and appraise transformative climate actions to advance NDC/NAP priorities?will inform LDCF activities while results from LDCF will also inform SCALA?s policy supports to integrate climate risk-informed priorities in the land-use and agricultural sectors into national and sectoral planning, budgeting, and monitoring, as well as to increase private-sector engagement in climate action in land-use and agriculture.</p>	<p>300,000</p>
<p>TCP/RAS/3802: Building capacity on promoting economically and environmentally efficient rice production through direct-seeded rice</p>	<p>This project aims to build capacity and strengthen enabling policy for direct seeded rice (DSR), transfer and demonstration of advanced DSR technologies and training of agricultural extension workers and farmers in the selected countries namely Cambodia, Philippines, and Myanmar. The project will build the capacity on strengthening and fostering Mechanization Service Provider and fill the technical gaps by availing of the achievements derived from the ongoing projects.</p>	<p>The enabling policy, successful models and technologies developed under this project, and trained agricultural extension workers lay foundation for LDCF to build on and upscale to LDCF target areas.</p>	<p>100,000</p>

	GCP/CMB/047/SWI Strengthening livelihood recovery of COVID-19 most affected rural communities in Cambodia	The project aims to promote inclusive and transformative COVID-19 economic recovery, ensuring food and nutrition security of COVID-19 most affected vulnerable households and a shift towards nutrition sensitive, climate resilient agriculture and food safety in Siem Reap and Banteay Meanchey	This project lays a foundation for LDCF to build on in supporting most vulnerable communities to recover from COVID-19 impacts and to build their resilience to future shocks.	1,000,000
GIZ	Regional Economic Development IV & V	The project promotes local economic development and employment. It follows an integrated approach, working with public administrations in districts, municipalities, and provinces, with small and medium enterprises as well as farmers/ producers from the rice, cassava, and vegetable/ fruit value chains. The program provides assistance to public-sector institutions and private-sector entities through capacity development and technical assistance. Farmers are supported to introduce sustainable farming methods to improve their livelihoods and income generation.	LDCF funding will enable significant leveraging of RED's activities on the promotion of climate-resilient rice-based production systems, livelihood diversification, and gender-sensitive resilience. This LDCF project will also build on RED's efforts in SRP certification (Component 3).	2,500,000

<p>Development of Micro, Small and Medium Enterprise Support Programme</p>	<p>The project promotes and develops MSME business skills and public-private dialogue in order to improve the business environment for MSMEs. In addition, it assists with technical and vocational education and training (TVET) activities and policy advice.</p>	<p>LDCF funding will enable GDA and GIZ to build on the current project to design capacity-building activities that strengthen the climate-related adaptive capacities of agricultural cooperatives (Component 3). This LDCF-supported project will also help to develop capacities for private sector entities, particularly small and medium enterprises, to professionalize and expand the rice value chain.</p>	<p>500,000</p>
<p>Improvement of Livelihood and Food Security I & II</p>	<p>The project supports land recipients in Social Land Concessions in preparing the land for farming, improving soil conditions, and engaging in agriculture by providing infrastructure through food-for-work schemes, small-scale machinery, knowledge and skills to help and improve the families' food security through diversification and awareness-raising about nutrition. The project is also promoting the value chain of organic certified rice, cassava, cashew nut, and mung bean through contract farming in Kratie, Tbong Khmum, Kampong Thom, Kampong Chhnange, and Kampong Speu.</p>	<p>LDCF funding will enable GDA, GDLC, and GIZ to build on this work by including a climate-adaptation perspective, particularly for gender-sensitive resilience-building and livelihood diversification. The proposed project will also extend the achievements of this project via designing and implementing activities for promotion of climate-resilient on-farm practices, establishment of PGSs, and transitions towards SRP certification of targeted farmers.</p>	<p>2,000,000</p>

	<p>Multi-sectoral Food and Nutrition Security in Cambodia</p>	<p>Through a multi-sectoral approach, the program is improving the nutrition of women and young children in Kampong Thom and Kampot provinces. The program consists of three fields of action: (1) improving the quality of nutrition services by providing training and awareness about balanced nutrition and basic hygiene, (2) diversifying nutrition and food production by training farmers, building their capacity to grow a more diverse range of crops, and linking them to markets to generate income, and (3) supporting the National Strategy for Food Security and Nutrition and the Scaling Up Nutrition initiative for Cambodia. A key priority for the program is to encourage families and schools to create their own kitchen gardens. Trainings cover numerous topics, including organic gardening, good hygiene practices, and agro-ecological considerations.</p>	<p>LDCF funding will enable MAFF and GIZ to add a climate-adaptive dimension to this work and expand the benefits of the project to a larger targeted area, particularly regarding gender-sensitive climate-adaptive livelihood diversification.</p>	<p>500,000</p>
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	<p>ASEAN Regional Integration Support ? Cambodia Trade</p>	<p>This funding supports Cambodia's efforts to take greater advantage of the opportunities offered by trade, export facilitation, and promotion for economic growth. It also supports ASEAN economic integration focusing on: (1) improving customs, trade facilitation, and standards strengthen Cambodia's integration into the AEC and to accelerate Cambodia's implementation of the WTO Trade Facilitation Agreement (TFA), (2) strengthening institutional capacities and regulatory practices for a more transparent, predictable, inclusive, and competitive business environment, and (3) enhancing private-sector engagement?especially of SMEs?and preparedness for AEC's seamless, single economic space.</p>	<p>LDCF funding will enable MAFF to link down-stream market development to climate-adaptive production, particularly through the broader adoption of the SRP standard and clearer market-based incentives for climate-adaptive production. For example, LDCF funding will expand the work of this baseline project to support production and value-chain mechanisms (e.g., contract farming) for increased adoption of climate-tolerant and high-value rice varieties. LDCF funding will therefore enable climate-adaptive linkages between (a) regional and international demand and (b) decentralized supply.</p>	<p>700,000</p>
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	Regional Economic Integration in ASEAN	<p>This program consists of four regional projects operating in ASEAN Member states with a focus on Cambodia, Laos, Myanmar, and Vietnam:</p> <ol style="list-style-type: none"> 1. Promoting Sustainable Agricultural Value Chains 2. Strengthening Consumer Protection 3. Promoting Competition Policies and Trade in Services 4. Strengthening Regional Structures for SME Promotion 	LDCF funding will enable MAFF to build on this program by adding a climate-adaptive dimension to the promotion of sustainable agricultural value chains, particularly in the targeted provinces.	300,000
IRRI	Rice IPM in Cambodia (EPIC) (USAID funding)	The project is delivering an integrated pest management (IPM) package that is validated for rice production in Cambodia's biophysical conditions and has been co-designed with Cambodian farmers and other rice value-chain actors. The validated rice IPM package reduces pesticide use and pre-harvest losses due to pests, weeds, and diseases. The package highlights cultural methods, available pest-resistant varieties, and biological control tactics (both conservation and augmentative biological control).	LDCF funding will enable MAFF and IRRI to harmonize MAFF's IPM and CCA approaches. For example, variety diversification (for climate-tolerance and income diversification) has direct implications for the incidence, prevalence, and duration of pest infestations. Likewise, monitoring of agricultural pests and diseases is an important aspect of MAFF's intended approach to integrated, climate-adaptive agricultural planning and support. Finally, LDCF support will enable IRRI and MAFF to incorporate IPM considerations into broader farm-level and commune-level planning for climate adaptability.	1,600,000

<p>Rice Agri-Food Systems CRP, RICE (GRiSP Phase II)</p> <p>(CGIAR funding)</p>	<p>The project is reducing poverty and hunger, improving human health and nutrition, promoting women's empowerment and youth mobilization, reducing the negative environmental impacts of rice production, and enhancing the climate resilience of rice-based farming systems. In Cambodia, GriSP Phase II concentrates on upgrading rice value chains by (i) conducting studies on varietal profiles needed by farmers, (ii) validating options for straw management, post-harvest processing, and farm mechanization, and (iii) developing business models for successful up-scaling of these technologies.</p>	<p>Whereas GRiSP II largely provides proofs of concepts for climate-adaptive and gender-sensitive development of the rice sector, LDCF funding will enable MAFF and IRRI to integrate the achievements of GRiSP II with broader agricultural strategies, fund supportive technical assistance and investments, and up-scale GRiSP II's best practices.</p>	<p>900,000</p>
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<p>Leveraging Diversity for Ecologically Based Pest Management (VERDE): Smart deployment of resistance genes and ecological engineering to prevent rice-yield loss and reduce pesticide dependency</p> <p>(BMZ funding)</p>	<p>The project strengthens CARDI's capacities to cope with the increasing frequency of pest and disease outbreaks due to climate change. The project does this by developing CARDI's research capabilities related to breeding, pathogen and pest surveillance, and pest ecology.</p> <p>Accelerating Adoption of Stress-tolerant Varieties in Cambodia ? Phase II strengthens the rice seed system (particularly the private sector's involvement) by distributing climate-smart rice seeds varieties in Pursat, Battambang, Siem Reap, and Kampong Thom provinces (i.e., 4 of the 5 provinces targeted by the LDCF project). The project contributes to development of the policy environment for seed health certification, capacity-building of small- and medium-scale seed producers, and efforts to breed climate-smart traits into local varieties.</p>	<p>LDCF funding will enable MAFF and IRRI to scale-up and apply VERDE's research findings and improved seed varieties, as well as to provide technical assistance and investments at decentralized levels to support seed-production, adoption, and reliable markets for climate-smart varieties.</p>	<p>400,000</p>
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	<p>CGIAR Research Program 7: Climate Change, Agriculture, and Food Security (CAAFS) Phase II</p> <p>(CGIAR funding)</p>	<p>This research program catalyzes positive change towards climate-smart agriculture (CSA), food systems, and landscapes by increasing adoption of climate-smart agricultural varieties and practices. In Cambodia, CCAFS has limited activities in one province.</p>	<p>LDCF funding will enable MAFF and IRRi to scale-up best-practices from this baseline and to expand market-based and value-chain supports for climate-smart agricultural varieties and practices.</p>	<p>100,000</p>
	<p>Climate Friendly Agribusiness Value Chains Sector Project</p> <p>Implemented by IRRi</p> <p>(ADB funding)</p>	<p>The project is to enhance climate resilience of critical agricultural infrastructure and help commercialize rice, maize, cassava, and mango production. It will help increase crop productivity and diversification. This is part of a larger loan project with ADB Green Climate Fund.</p>	<p>LDCF funds/activities will complement the initiatives for this project which will focus in provinces out of the Tonle Sap Region. The technologies, commercialization initiatives, and climate-resilient strategies will be synergistic for both projects.</p>	<p>2,800,000</p>
WCS	<p>Building resilience to environmental change through integrated landscape management of the Tonle Sap</p> <p>Biosphere Reserve, Cambodia (EU CAPFISH funding)</p>	<p>The project will build resilience to ongoing environmental change in ecosystems, communities and biodiversity in the TSBR, via a multi-scaled, integrated landscape approach. The project simultaneously addresses the drivers of environmental change at landscape scale whilst developing scalable working models of best practice with government, communities and the private sector at the local scale.</p>	<p>The project will complement LDCF activities through enhancing and expanding sustainable agricultural models in the Tonle Sap Floodplain, including Sustainable Rice Platform. With partners, the project will support the development of an SRP National Chapter in Cambodia, to facilitate national level adoption of the SRP Standards into agricultural practice.</p>	<p>1,200,000</p>

<p>Multi-scaled Conservation and Natural Resource Management in the Lower Mekong (Margaret A Philanthropies funding)</p>	<p>The project focusses on three landscapes ? Tonle Sap Great Lake (TLS) and Northern Plains (NPL) in Cambodia, and the Nam Kading, Nam Mouan, and Nam Heung Catchments of Bolikhamxay (BLK) in Lao PDR. Together these sites contain nearly 1.3 million hectares of forest and wetlands, exemplify the threats posed by expanding agricultural and infrastructure development in the Lower Mekong, and also have high ecosystem service values. The project has three outcomes: #1: Conservation improved through effective landscape planning with increased areas outside government protected areas under effective management; #2: Conservation areas deliver benefits to surrounding communities; #3: Incentive-based approaches promote increased conservation action by local stakeholders.</p>	<p>The project will complement LDCF activities through expanding pilot Sustainable Rice Platform activities in the Tonle Sap Floodplain, linked to an international buyer.</p>	<p>300,000</p>
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	<p>USAID Greening Prey Long</p>	<p>The project aims to conserve biodiversity, combat deforestation, improve governance, and promote sustainable economic growth across more than 3.3 million hectares of forest, watersheds, and agricultural land in northeastern Cambodia. The project adopts an integrated approach to promote conservation-friendly, resilient, and low-emission sustainable economic development.</p>	<p>The project will complement LDCF activities through enhancing and expanding Sustainable Rice Platform activities in the Tonle Sap Floodplain. With partners, the project will support the development of an SRP National Chapter in Cambodia, to facilitate national level adoption of the SRP Standards into agricultural practice.</p>	<p>300,000</p>
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<p>ADB/ IFAD</p>	<p>Tonle Sap Poverty Reduction and Smallholder Development Project - Additional Financing (TSSD)</p>	<p>The project is enhancing agricultural productivity and improving access to markets in 270 target communes of 7 provinces (Banteay Meanchey, Battambang, Kampong Cham, Kampong Thom, Prey Veng, Siem Reap, and Tboung Khmum) through investments in climate-resilient productive infrastructure, capacity-building for disaster risk management of the communities and commune councils, and a strengthened enabling environment for agricultural productivity, diversification and climate resilience. [122]¹²²</p> <p>The project has 3 outputs:</p> <p>Output 1: Rural productive infrastructure and livelihoods improved with capacity in disaster risk management (DRM) enhanced</p> <p>Output 2: Enabling environment for increased agricultural productivity, diversification and climate resilience created</p> <p>Output 3: Project management strengthened</p>	<p>Overall alignment and additionality:</p> <p>LDCF funding will enable MAFF to leverage this baseline project in three ways. First, it will enable the efficient geographical expansion of achievements to additional communes. Second, it will enable the integration of the baseline project's initiatives with other complementary technical areas (e.g., increased production and adoption of high-quality seeds for climate-tolerant and high-value varieties). Third, it will enable MAFF to capitalize on the baseline by providing additional support to lock-in and magnify baseline achievements (e.g., integration of climate planning in sub-national DRR plans, local use of CRIPs to invest in technology and assets to leverage baseline initiatives for greater climate resilience, improved integration and interpretability of agro-met data for decentralized planning).</p> <p>The LDCF project will leverage the TSSD baseline project in the following potential ways:</p> <ul style="list-style-type: none"> ? Scale out TSSD project activities to PRRC communes not covered by TSSD. ? Facilitate more effective integration of sub-national level planning approaches (via PDAFFs) based on community needs and priorities. ? Enable LDCF project's beneficiaries to benefit from TSSD investment in rural productive infrastructure. ? Enable integration of TSSD measures with complementary PRRC 	<p>23,000,000</p>
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IFAD	IFAD/ Government's programme ?Agriculture Services Programme for Innovation, Resilience and Extension (ASPIRE)	The program is establishing an improved model of extension services for Cambodia that will help smallholder farmers contribute to broad-based economic growth. ASPIRE is a national program that will ultimately be implemented through Provincial Departments of Agriculture in ten provinces. Components 2 and 3 of ASPIRE are dedicated to capacity development for extension services and improved extension services.	LDCF funding will enable MAFF to mainstream climate-adaptive considerations, policies, and practices into the new model of extension services, as well as to integrate CCA into ASPIRE's value chain linkages (e.g., building market, service support, and seed supply for improved varieties).	15,000,000
EU/ SIDA/ UNDP	Cambodia Climate Change Alliance (CCCA) Programme ? Implemented by UNDP	The program strengthens national systems and capacities to support the implementation and coordination of Cambodia's climate change response. Whereas the prior phase included some activities pertaining to agriculture, the current phase of CCCA focuses on other sectors (environment, energy, rural development, public transport, and education). CCCA continues to strengthen overall coordination of climate change actions and knowledge management.	LDCF funding will enable MAFF to continue to leverage CCCA's achievements in the agricultural sector and, more importantly, to facilitate agricultural integration as part of on-going and expanding inter-ministerial and cross-sectoral coordination for CCA. Additional benefits will accrue in both directions: (i) incorporation of harmonized CCA approaches into agricultural strategies and (ii) incorporation of agricultural considerations and priorities into inter-sectoral CCA approaches.	1,456,000

Several additional projects related to climate resilience of rice and other crops are underway, and will be built upon and collaborated with to ensure complementarity between the LDCF project and other ongoing initiatives. In particular, the project will utilize the standards-based approaches (e.g., SRP and CamGAP) to promote partnerships and coordination with other relevant initiatives. Some of these baseline projects are nearing completion and are pursuing follow-on phases. Whether those projects conclude or continue, this LDCF project will align with their efforts, make use of their lessons learned, and build on their momentum and networks.

Cambodia Agricultural Value Chain Program (CAVAC) primarily focuses on construction of irrigation schemes for rice production, targeting areas where river surface can be diverted via canals to farms farther away (including Kampong Thom province). The schemes cover secondary and tertiary canals, as well as electric pumps; the latter have lower operating costs and GHG emissions compared to diesel-powered pumps. During 2010-2015, 20 irrigation schemes were constructed, delivering year-round water to over 19,000 households; another 18,000-22,000 households are expected to be reached by the end of the second phase in 2021. CAVAC also trains suppliers of pesticides and fertilizers on their correct use; the information is then passed onto the farmers. CAVAC also actively promotes climate-resilient rice varieties developed by CARDI by: training agricultural cooperatives contracted by AMRU (a large-scale rice processing and exporting company) to produce and cultivate the seeds, and promoting the use of mechanical seeders to reduce labor and seed requirements, thus enabling farmers to purchase climate-resilient seeds, which tend to be more expensive than other varieties.^[123]¹²³

ADB's **Climate-Friendly Agribusiness Value Chains Sector Project** (USD 141M) funded by Australia is developing productive and climate-smart agribusiness value chains in rice, maize, cassava, and mango industries in Kampong Cham, Tboung Khmum, Kampot, and Takeo provinces. This includes rehabilitating irrigation and water management infrastructure (off-farm irrigation systems, on-farm rainwater harvesting ponds, and drip irrigation) to climate-resilient condition, upgrading agricultural cooperatives' value-chain infrastructure (drying, processing, and storage facilities), deploying climate-resilient crop varieties with support from CARDI and IRRI, training farmers in climate-smart agricultural practices, demonstrating laser land-levelling, and supporting MAFF and the Ministry of Commerce in creating a favorable policy environment for agribusiness to mobilize private-sector participation through PPPs and socially and environmentally sound contract farming. This LDCF project will concentrate on the Tonle Sap basin and thus geographically complement the ADB project. This LDCF project will also model how the standards-based production (e.g., CamGAP and SRP Standard for Sustainable Rice Cultivation^[124]¹²⁴)--can create an incentive mechanism for the adoption of climate-smart varieties and practices by linking producers to high-value export markets.^[125]¹²⁵

World Bank's **Cambodia Agricultural Sector Diversification Project** (USD 101M) is developing diversified and climate-resilient agricultural value chains in 12 provinces, including Battambang and Siem Reap. This includes supporting the preparation and implementation of initiatives in non-rice value chains (including a 30M USD credit line and a 10M USD matching grant facility), rehabilitation and upgrading of irrigation systems linked to the supported initiatives, training Farmer Water User

Committees (FWUCs) and municipalities to operate and maintain the financed irrigation infrastructure, and rehabilitating rural roads connected to the supported initiatives.[126]¹²⁶

World Bank's **Cambodia Sustainable Landscape and Ecotourism Project (SLEPC)**; USD 53M) is improving the management of protected areas (PAs) and community protected areas (CPAs) in the Cardamom Mountains and Tonle Sap areas, thus reversing degradation of forestry and fishery resources and increasing the economic returns from these resources. The project covers **Pursat**, Koh Kong, **Battambang**, Kampong Speu, **Kampong Thom**, **Siem Reap**, and Kampong Chhnang provinces, and is developing and implementing a spatial forest-monitoring, reporting, and enforcement framework and strategy, encouraging private-sector and community participation in ecotourism and NTFP value chain enterprises, financing the zoning, demarcation, registration, and management planning for six PAs, and financing connectivity infrastructure to allow increased numbers of visitors to selected PAs (e.g., rural roads, development of ecotourism corridors, and linkages with main markets).[127]¹²⁷

IFAD's **Accelerating Inclusive Markets for Smallholders (AIMS)**, USD 61M, 2017-2023) increases the prosperity of smallholder farming households by strengthening value chains and increasing profitable links to agri-businesses and markets. AIMS increases profits for farmers and businesses from inclusive value chains for multiple higher-value products, increases private investment in priority value chains from smallholders and agri-businesses, and builds capacities of national and sub-national institutions to design and deliver inclusive agricultural market-development initiatives. To date, AIMS has primarily focused on value-chain development for quality-assured rice, cassava, silk, vegetables, and backyard chicken.

ADB's **Climate Resilient Rice Commercialization Sector Development Program** (USD 79M, 2015-2020) is increasing production and efficiency along the rice value chain in **Battambang**, **Kampong Thom**, and Prey Veng provinces by (i) strengthening the rice value chain, (ii) improving the legal and regulatory framework in agricultural land management, (iii) improving access to credit by paddy producers and rice millers/ exporters, and (iv) enhancing paddy production and productivity through improved irrigation water use efficiency, establishment of paddy post-harvesting facilities, and paddy crop insurance pilots.[128]¹²⁸ The project has contributed to the development of the rice seed policy for Cambodia, including national seed-quality standards, seed-certification schemes, procedures and guidelines for varietal release, and the development of a law on agricultural land and a law on plant protection and quarantine. Needs assessments and feasibility studies on rice post-harvest management have been conducted and post-harvest handling equipment is being installed in three research stations (one in each target province) to increase the stations' capacities as seed centers. Technical training on quality seed production, implementation of the SRP Standard, and techniques such as laser land-leveling have been initiated. This LDCF project will build on and potentially enlarge the geographic scope of these achievements. Specifically, this LDCF project will further strengthen individual and institutional capacities in implementing standards-based production (e.g., SRP and CamGAP), pilot economic and environmental indicators to monitor the impact of adopting supported standard, and introduce climate-smart practices and varieties to improve rural resilience.

Funded by ADB and Pilot Program for Climate Resilience (PPCR), the **Greater Mekong Subregion Flood and Drought Risk Management and Mitigation Project** (USD 48M) is improving capacity and preparedness to manage and mitigate the impact of flood and drought events in **Pursat** province.

To this end, the project is rehabilitating an irrigation scheme on the Pursat river to provide wet-season supplemental irrigation for 16,100 ha and full irrigation to a smaller command area during the dry season, installing new headworks to facilitate peak-flow diversion, improving national flood and drought forecasting, establishing a flood and drought warning system, improving FWUCs' capacities to manage drought and flood risks, and improving communities' disaster-preparedness. This LDCF project will coordinate activities related to weather-forecasting, agro-met services, early warning systems, and water-management training with this ADB/ PPCR project to prevent overlap and ensure that lessons learned to date are incorporated.

GIZ/ IRRI's **Remote-sensing-based Information and Insurance for Crops in Emerging Economies (RIICE)** is a regional program covering Cambodia, India, Indonesia, Thailand, and Vietnam. RIICE is reducing the vulnerability of smallholder farmers engaged in rice production by developing MAFF's technical capacities to conduct near-real-time rice-monitoring using remote-sensing and crop-modeling technologies. The technical capacities are then used to design and pilot insurance solutions, which can cushion the negative financial effects of natural catastrophes for governments, agricultural intermediaries, and rural farmers.[129]¹²⁹

ADB's **Agricultural Value Chain Infrastructure Improvement Project (AVIP, USD 76M)** increases competitiveness and value-addition in selected (non-rice) agricultural value chains in the project's targeted areas of Kampong Cham, **Kampong Thom**, Oddar Meanchey, Preah Vihear, **Siem Reap**, and Tboung Khmum. The project strengthens post-harvest and logistical facilities, improves agricultural production and service infrastructure, improves rural connectivity, and enhances business partnerships among value-chain stakeholders.

IFAD's **Sustainable Assets for Agricultural Markets, Business, and Trade project (SAAMBAT, 2020-2025)** increases productivity of rural youth, enterprises, and the rural economy. SAAMBAT supports investments in climate-resilient infrastructure, renewable energy, and technical and entrepreneurial capacities of youth to capitalize on emerging opportunities.

1.a.5. Adaptation benefits

For details on linkages to LDCF's indicator framework, see Section 10: *Benefits*.

The proposed project will build climate resilience and adaptability across several levels and dimensions in Cambodia, particularly for rice-growing communities in the Tonle Sap region.

At national and sub-national levels, institutions will have improved capacities for comprehensive planning and implementation. Improved inter-ministerial and inter-sectoral coordination will yield harmonized and specified metrics of CCA in the agricultural sector, including gender-sensitive aspects. Provincial vulnerability assessments with incorporated AEZ climate modelling will enable longer-term adaptation planning. Modified policy frameworks will facilitate market-based incentive mechanisms for climate-resilient agricultural practices and value chains.

Communities and households will benefit from reduced exposures and sensitivities to climatic hazards, building both threat-specific and general climate adaptability. Communities and households will have diversified income sources, thereby spreading their risk profiles. Increased demand for and supply of certified seed and improved rice varieties?in terms of climate resilience and market value?will increase household net income (improved yields, higher market prices, increased labor efficiency, etc.). Similarly, the project will pilot approaches to increase household access to credit in ways that are sensitive to high rates of household indebtedness without crowding out private-sector financing. Increased adoption of climate-resilient practices will also build biophysical capital as a climatic buffer, such as through improved information for water management, greater resilience to pests and diseases via IPM, lower production costs via IPM, reduced erosion and land degradation via agro-ecological practices (e.g., soil cover, crop rotation/ diversification), etc.

Local climate adaptability will also be increased via strengthened agricultural cooperatives. Increased prevalence of contract farming will clarify market signals in support of climate-resilient production practices and provide more reliable value-chain transactions at the local level. Increased awareness and adoption of sustainable production standards?especially via MAFF?s standards of good agricultural practices and SRP?will build local economic resilience by increasing farm-gate prices (due to increased paddy quality), facilitating production contracts, improving communication and signal efficiency in the rice value chain, and strengthening market incentives for sustainable production. Local communities will also benefit extensively from the project?s direct investments in various community-proposed, climate-adaptive infrastructure and technologies (via CRIPs in Components 2 and 3). Those investments will also directly yield reciprocal benefits between the project and local communities, because, when possible, the project will fund local labor at concessional wage rates to implement the supported investments?such that local communities cofinance the investments.

Finally, the RGC will benefit from the project?s investments in strengthened administrative and operational capacities for the operational partners?GDA and GDLC?to execute externally funded projects directly. Moreover, the project?s knowledge-management systems will integrate with and inform MAFF?s and MoE?s broader, evolving M&E framework for CCA. Finally, the project will further build GDA?s and GDLC?s network of knowledge-sharing via international coordination initiatives, particularly SRLI.

1.a.6. Innovativeness, durability, potential for scaling up, and capacity development

Innovation

The project is innovative in that it takes an ecosystem-based and market-driven approach to build resilience in production systems and value chains to enhance the adaptive capacities of vulnerable, rice-producing communities.

The project will deliver innovative, climate-resilient agricultural practices and technologies to farmers—particularly for rain-fed and dry-season production—designed to adapt to increasing heat and drought conditions and consequently reduced availability and reliability of water. It will reduce costs and risks associated with the adoption of climate-resilient production systems in the targeted provinces by removing informational, financial, and institutional barriers to their adoption. Through a standards-based approach (e.g., SRP, GAP) and TAPE, environmental indicators will also be collected to provide simple measures of the environmental impacts from diversified cropping systems across the landscapes in the Tonle Sap Region.

The capacities and technologies supported via this project establish the foundation for broader-scale adoption of innovations currently under development and piloting in Cambodia, including remote-sensing-based information to map and predict cropping and damage coupled with insurance coverage systems (e.g. RIICE). The project also creates the foundation for adaption and adoption of innovations that support the efficient use of inputs, such as AutoMon (automated monitoring for improved water management) and Rice Crop Manager (app-based, site-specific recommendations for fertilizer use).

This project expands the positive impacts of adaptation technologies and practices tested in Cambodia by linking these practices with incentive mechanisms that ensure profits from such practices accrue to the producers, as well as others in the value chain. Approaches such as the contracts through standards-based production (e.g., PGS and the SRP Standard) vertically connect producers with other value-chain actors. These mechanisms ensure that standards of sustainable practices are being followed and that market incentives for safe and sustainably-produced food encourage and sustain these practices.

The project's KMS establishes a foundation for an adaptive learning platform, allowing stakeholders at different levels of the system to monitor and learn from project interventions over the course of implementation, as well as to benchmark and cross-reference performance across sites and potentially across countries.

Durability

This project's design closely follows GEF's and STAP's guidance on durability and sustainability. *Durability* is "the long-term maintenance of outcomes and consequent impacts, whether environmental or not". *Sustainability*, which is a sub-set of durability, is a "project's or program's effects on natural resources, including in the long-term, beyond the project lifetime." [130]¹³⁰, [131]¹³¹ GEF has

identified four inter-related factors that contribute to durability: (i) theory of change, (ii) multi-stakeholder processes, (iii) stakeholder involvement, and (iv) adaptive learning.[132]¹³²

In line with GEF's related guidance, this project's theory of change (see end of section II.1.a.2.) contributes to durability by reflecting a thorough identification of drivers, desired outcomes, barriers, enablers, considerations for phased withdrawal, and appropriate responses.

The project's design has availed of and ensures continued multi-stakeholder processes by taking a broad view of stakeholders and establishing multiple platforms to ensure on-going inclusion and flexibility, particularly via the PSC and TAG. (See Annex I2 for stakeholder engagement matrices.)

Likewise, the project ensures continued stakeholder involvement via engagement with CSOs, an ambitious gender action plan, multiple activities to facilitate long-term private-sector engagement (including concerted efforts to build market-driven momentum), and capacity-development across multiple scales and stakeholder groups. Government extension staff, lead farmers in agricultural cooperatives, and SMEs will be trained in adaptation measures, creating a core of highly qualified staff that can pass on this knowledge to other extension workers and farmers. Establishment of farmer field schools and the targeted inclusion of women will also contribute to dissemination of knowledge on climate-resilient practices and agribusiness development, after project completion. Working with MAFF officials, the project will seek to secure future government budget allocations for the continuation of improved extension services and other initiatives pursued by the project, after project closure.

The project will achieve adaptive learning via multiple means. In addition to the aforementioned relevant actions (e.g., stakeholder engagement, gender action plan), the project's extensive M&E (section II.8.) and KM (section II.9.) strategies ensure thorough awareness of the project's effectiveness and efficiency across multiple criteria, as well as extensive shared best practices and lessons learned with related baseline initiatives. Moreover, the project will equip stakeholders at multiple levels with capacities to adapt to evolving circumstances. In fact, it is a central tenet of the project's design that durable resilience is primarily a function of stakeholders to predict, prepare, respond, and adapt to changes. That is, climate-change adaptability is not a set of solutions, but a set of capacities for problem-solving.

Scaling up

The project will scale up climate-resilient agriculture practices and technologies for rice production that are suited to wider dissemination and large-scale adoption in Cambodia. By illustrating that these technologies lead to increased farmer incomes, improved value chain efficiency, and reduced income

variance, the project will promote their uptake in other areas of Cambodia, and potentially in neighboring countries.

Two parallel strategies will further support the up-scaling of adaptation measures promoted by this project. One is the proliferation of private-sector links for farmer groups and SMEs to integrate with markets and industries that support sustainable practices. The other is the integration of such practices and technologies within national development programs implemented by the government and other partners.

Component 4 will capture the insights that can be shared with governmental agencies and developmental partners for potential inclusion in similar projects in Cambodia and elsewhere in Southeast Asia. The project M&E plan and KM strategy ensure that the project's effectiveness across multiple dimensions is well understood, such that best practices and lessons learned can be shared with stakeholders to promote the uptake of successful and innovative practices by additional communities, additional governmental initiatives, and other projects. The project will also work to ensure that project outcomes influence future public and private investments in the agricultural sector by establishing methods, processes, and guidance to allow for mainstreaming of climate-resilient rice production into policy-planning and master-planning processes.

[1] Royal Cambodian Government, *Cambodia's Second National Communication to the United Nations Framework Convention on Climate Change*, 2015.

[2] Royal Cambodian Government, *Cambodia's Second National Communication to the United Nations Framework Convention on Climate Change*, 2015.

[3] World Bank, *Cambodia Overview*, 2019.
<https://www.worldbank.org/en/country/cambodia/overview>

[4] Royal Cambodian Government, *Cambodia's Second National Communication to the United Nations Framework Convention on Climate Change*, 2015.

[5] World Bank, *World Development Indicators: Structure of Output*, 2019.
<http://wdi.worldbank.org/table/4.2>

[6] Oudry et. al, *Assessing Vulnerabilities and Responses to Environmental Changes in Cambodia*, 2016.

[7] IFC, *Cambodia Rice Market Studies - Export Potential and Strategies*, 2015.

[8] Sovann, P.C. (2010). *Using GIS and Geostatistics to Develop Hazard and Risk Maps of Arsenic in Shallow Groundwaters of Cambodia*. Royal University of Phnom Penh: thesis.
https://www.researchgate.net/publication/267755536_USING_GIS_AND_GEOSTATISTICS_TO_DE

VELOP_HAZARD_AND_RISK_MAPS_OF_ARSENIC_IN_SHALLOW_GROUNDWATERS_OF_CAMBODIA

[9] *Cambodia Rice Market Studies*, 2015.

[10] Royal Government of Cambodia, *Cambodia's Second National Communication to the United Nations Framework Convention on Climate Change*, 2015.

[11] <https://cambodia.wcs.org/About-Us/Latest-News/articleType/ArticleView/articleId/9170/Wildlife-Friendly-Ibis-Rice-Received-International-Recognition.aspx>

[12] Arias, et al. (2012). "Quantifying changes in flooding and habitats in the Tonle Sap Lake (Cambodia) caused by water infrastructure development and climate change in the Mekong Basin?", *Journal of Environmental Management*, 112, 53-66.

[13] Kummu et al., "Water balance analysis for the Tonle Sap Lake floodplain system?", *Hydrological Processes*, 28(4), 1722-1733 (2014).

[14] Arias et al., "Quantifying changes in flooding and habitats in the Tonle Sap Lake (Cambodia) caused by water infrastructure development and climate change in the Mekong Basin?", *Journal of Environmental Management*, 112, 53-66 (2012).

[15] National Institute of Statistics (2008). *Cambodia Population Census 2008*.

[16] Arias, et al. (2013). The flood pulse as the underlying driver of vegetation in the largest wetland and fishery of the Mekong Basin, *AMBIO*, 42 (7), 864-876.

[17] Open Development Cambodia

[18] Open Development Cambodia

[19] MAFF, *Annual Reports*, and <http://ricestat.irri.org:8080/wrs>, access date 01 September 2020.

[20] MAFF, *Annual Report 2019-2020*.

[21] MAFF, *Annual Report 2019-2020*.

[22] MAFF, *Annual Report 2019-2020*.

[23] One Single Window Services and Cambodian Rice Federation. For 2020, the amount is for the first 11 months.

[24] MoE

[25] Oudry, et al. (2016). *Assessing Vulnerabilities and Responses to Environmental Changes in Cambodia*.

[26] MAFF, 2016.

[27] http://www.iwmi.cgiar.org/Publications/issue_briefs/cambodia/issue_brief_03-groundwater_for_irrigation_in_cambodia.pdf

[28] National Committee for Disaster Management, 'Guideline for implementation of the disaster data reporting forms: Development investment that does not consider disaster risk will lead to the accumulation of more risk?', 2014.

[29] Royal Cambodian Government. (2015). *Cambodia's Intended Nationally Determined Contribution*.

[30] National Committee for Disaster Management, 'Disaster Risk Management work in 2016 and Direction in 2017?', 2017.

[31] <http://www.fao.org/giews/earthobservation/country/index.jsp?lang=en&type=31&code=KHM>

[32] Royal Cambodian Government, *Cambodia's Intended Nationally Determined Contribution*, 2015.

[33] NCSD (2016); https://ncsd.moe.gov.kh/standard_report_visualize_final_report/

Darker shades represent higher proportions of communes at high risk of climatic hazards. Light grey = *unrated/ missing data*.

[34] S. Peng, J. Huang, J.E. Sheehy, R.C. Laza, R.M. Visperas, X. Zhong, G.S. Centeno, G.S. Khush, & K.G. Cassman (2004). Rice yields decline with higher night temperature from global warming. *PNAS*, 101 (27), 9971-9975. <http://www.pnas.org/content/101/27/9971>

[35] IFAD. (2013). *Cambodia Environmental and Climate Change Assessment*.

[36] UNDP. (2018, May). *Addressing Climate Change Impacts on Economic Growth in Cambodia*. http://www.kh.undp.org/content/cambodia/en/home/library/environment_energy/modelling-of-climate-change-impacts-on-growth.html

[37] P.L. Poulton, N.P. Dalgliesh, S. Vang, T. Veasna, & P. Charlesworth. (2015). *Resilience of smallholder farmers in Cambodian lowland rice ecosystems in managing for future climate uncertainty*. Paper presented at the 17th ASA Conference, 20-24 September, Hobart, Australia. http://agronomyaustraliaproceedings.org/images/sampledata/2015_Conference/pdf/agronomy2015final00164.pdf

[38] Royal Cambodian Government. (2015). *Cambodia's Second National Communication to the United Nations Framework Convention on Climate Change*.

[39] FAO, UNICEF, & WFP. (2016, Sept). 'Part 1: 2015/ 2016 El Niño situation analysis.' *Household Resilience in Cambodia: A review of livelihoods, food security and health*. <https://docs.wfp.org/api/documents/WFP-0000069105/download/>

[40] Given that most farmers prefer the flavor of local varieties, they would be more likely to sell new varieties as a cash crop than to consume new varieties.

[41] FAO and MAFF, *Plan of Action for Disaster Risk Reduction in Agriculture 2014-2018*, 2013.

[42] Pandey et al., *Economic costs of drought and rice farmers? coping mechanisms: A cross-country comparative analysis*, 2007.

[43] ID Poor (Levels 1 and 2) provincial surveys 2014 ? 2016; Asia Foundation?s *Cambodia Atlas of Gender and Environment Project*; Open Development Cambodia

[44] Open Development Cambodia

[45] CTIS, Chapter 8: Agri-business Value Chains for Export Enhancement, 2019.

[46] CEDAC, *Pesticide Use and Consequence in Cambodia*, 2004; Ngin, *The Study on Sustainable Integrated Pest Management on Rice in Cambodia*, 2017; Khun and Ngin, *Does Cambodia need Integrated Pest Management? Past experience, present knowledge and future prospects*, 2014; FAO STAT: <http://faostat.fao.org/site/423/default.aspx#ancor>

[47] MAFF, *Annual Report 2015* and *Annual Report 2016*.

[48] Flor, R. *et al.* 2018. The technological trajectory of integrated pest management for rice in Cambodia, *Sustainability* 10: 1732.

[49] EJF, *Death in Small Doses: Cambodia?s Pesticide Problems and Solutions*, 2002; Khun and Ngin, *Does Cambodia need Integrated Pest Management? Past experience, present knowledge and future prospects*, 2014.

[50] Preap and Kang, *Current Use of Pesticides in the Agricultural Products of Cambodia*, 2016.

[51] Ministry of Environment of Cambodia and UNDP Cambodia, *Cambodia Human Development Report 2011*, 2011.

[52] Erban, L.E., & Gorelick, S.M. (2016). Closing the irrigation deficit in Cambodia: Implications for transboundary impacts on groundwater and Mekong River flow. *Journal of Hydrology*, 535, 85-92. <https://www.sciencedirect.com/science/article/pii/S0022169416300129>

[53] *Ibid.*

[54] Lacombe, G., Douangsavanh, S., Vongphachanh, S. & Pavelic, P. (2017). Regional assessment of groundwater recharge in the Lower Mekong Basin. *Hydrology*, 4, 1-18. doi:10.3390/hydrology4040060

[55] <https://cambodiawellmap.com/worldbank/maps/44786/water-supply-by-commune#>

[56] Climate-smart agriculture (CSA) is an approach to reorienting agricultural systems to support development and ensure food security in a changing climate. CSA has three primary dimensions: (1) sustainably increasing agricultural productivity and livelihoods, (2) increasing climate-change adaptability and resilience, and (3) contributing to climate-change mitigation when possible.
<http://www.fao.org/climate-smart-agriculture/en/>

[57] <https://www.thegef.org/topics/capacity-building-initiative-transparency-cbit>

[58] <https://www.thegef.org/project/strengthening-capacity-agriculture-and-land-use-sectors-enhanced-transparency-implementation>

[59] Ideally, data are as accurate as needed for effective decision-making. These estimations may benefit from at least a qualitative assessment of allowable tolerances and sensitivities to informational accuracy, including how recently the data were collected.

[60] Accessibility is largely a function of delivery and formatting. Ideally, relevant information is pushed to the decision-maker when appropriate and in a format that feeds directly into the decision-making process without need for interpretation or modification. Users should clearly understand the relevance and implications of the information. At minimum, relevant information should be accessible upon request and sufficiently interpretable by users.

[61] Informational efficiency is the value of the information divided by the quantity of the information. Ideally, information provides maximum decision-making value with minimum quantity.

[62] AFOLU = agriculture, forestry, and other land uses

[63] ETF = Enhanced Transparency Framework

[64] Link to guidelines for FAO's Tool for Agroecology Performance Evaluation (TAPE):
<http://www.fao.org/3/ca7407en/CA7407EN.pdf>

[65] FAO. 2019. *TAPE Tool for Agroecology Performance Evaluation 2019 ? Process of development and guidelines for application. Test version.* Rome. (Quotation on p. 6.)

[66] Bangkok, Thailand. Sept 2019.

[67] Feb 2020

[68] <https://measure.icrisat.org>

[69] Subject to TAG and PSC consultation during inception. TAPE might also be operationalized via the Kobo platform, as has been piloted by FAO in Cambodia, Lao PDR, and Vietnam.

[70] Fayon, S. 2019, Dec. *Analysis of SRP and TAPE duplication, complementarities and synergies.* Produced as part of FAO's technical cooperation program on "Addressing the 2030 Agenda on climate change and food security through Climate-Smart Agriculture" (TCP/RAS/3604) and FAO's support to the Sustainable Rice Landscapes Initiative under the GEF-7 Food Systems Impact Program.

[71] E.g., see CCCA's coordinating role relative to DCC's access to climate-related finance, as supported via the NAP Global Support Programme (NAP-GSP).

<https://www.globalsupportprogramme.org/cambodia-strives-ownership-their-gcf-nap-process>

[72] <http://www.riice.org/about-riice/>

[73] E.g.: Cordella, T. 2018. *Optimizing finance for development (English)*. Policy Research working paper; no. WPS 8320. Washington, D.C.: World Bank Group.

<http://documents.worldbank.org/curated/en/859191517234026362/Optimizing-finance-for-development>

[74] For a broad evaluation of rice value chains, including benefits, challenges, and policy options for contract farming, see: Cramb, R. (Ed.). 2020. *White gold: The commercialization of rice farming in the Lower Mekong Basin*. St. Lucia, Australia: Palgrave, MacMillan. <https://doi.org/10.1007/978-981-15-0998-8>

[75] This intervention accords with MAFF's policy recommendations in *The Promotion of Paddy Production and Rice Export* (2010).

[76] Formerly the Rural Development Bank

[77] [http://www.sustainable-rice.org/assets/docs/SRP%20Assurance%20Scheme%20\(Final\).pdf](http://www.sustainable-rice.org/assets/docs/SRP%20Assurance%20Scheme%20(Final).pdf)

[78] As of March 2020, the report is drafted and forthcoming. It will be available as a resource during the project's implementation. See also: Goldman, L., Tsan, M., Dogandjeva, R., Colina, C., Daga, S., & Woolworth, V. (Dalberg Global Development Advisors). 2019. *Inflection point: Unlocking growth in the era of farmer finance*. Initiative for Smallholder Finance, MasterCard Foundation, USAID, Rural and Agricultural Finance Learning Lab, & Global Development Incubator.

[79] E.g., philanthropies, impact investors, micro-finance institutions, value-chain finance, angel investors, venture capital firms, private equity funds, commercial banks, institutional investors, etc.

[80] E.g., SRP, CamGAP

[81] E.g., PGS

[82] <http://www.fao.org/farmer-field-schools/home/en/>

[83] In consultation with the TAG, the PSC may approve additional content or modules as core components of the project's FFS content.

[84] The SRP Standard may be updated prior to or during implementation. Alignment with any standard or version of a standard will be determined by local communities in consultation with the project's operational partners, and project-based support is contingent on PSC approval. For reference: SRP. (2019). *The SRP Standard for Sustainable Rice Cultivation (Version 2.0)*. Sustainable Rice Platform: Bangkok: Thailand.

<http://www.sustainable-rice.org/assets/docs/SRP%20Standard%20Version%202.0%20Final.pdf>

[85] It has been provisionally agreed that these selections will be consistent at district level (i.e., all communities in a district receive the same FFS package) in order to balance concerns for (a) local relevance and (b) economies of scale in delivery. That is, different packages for each village would be highly tailored, but impracticable for delivery. Conversely, a single package for all participants would

be highly cost-efficient, but likely insufficiently tailored to local priorities. This decision regarding district-level consistency may be reconfirmed and revisited during the project's implementation to ensure an appropriate balance.

[86] CIP budgets are allocated to communes on 3-year cycles. Different communes are on different cycles. CIP budgets depend on commune populations, though most communes in the Tonle Sap plain received about 300M KHR in 2020 (~\$74,000).

[87] DIP funding is distinct from CIP funding. In 2020, districts in the Tonle Sap plain each received about 800M KHR (~\$196,000).

[88] This is not a list of FFS modules, but an indication of the expected *content* to be covered by FFS modules. Many topics will be combined into thematic modules, which may reflect the AEZ and suitability mapping in Output 1.1.3.

[89] One way to think about the 20th percentile would be to ask, "If someone were to adopt this practice, what would be the worst value for this factor that they would expect to see in any given 5-year period?" E.g., if a farmer were to grow cashews, what would be the lowest farm-gate price for cashews that s/he might expect to see in a 5-year period? What would be the highest wage labor cost s/he would likely see in a 5-year period? The 50th percentile could be thought of as a normal or generally expected value for a given factor (i.e., the value one would expect in a normal year). The 80th percentile is like the 20th percentile, but for the *best* rather than the *worst* value in a 5-year period (e.g., the *highest* expected farm-gate price for cashews in a 5-year period).

[90] For an example of the efficacy of this approach, which combines local participation, lead farmer adoption, and repeated community engagement, see: Cui, Z., Zhang, H., Chen, X., *et al.* (2018). Pursuing sustainable productivity with millions of smallholder farmers. *Nature* (Letters), 1-16. doi:10.1038/nature25785. Note especially the lessons learned under "Engaging farmers and changing behaviour" (p. 5).

[91] Though potentially standardized at district or other level, as noted above.

[92] Varieties can be discussed in *genotypic* or *phenotypic* terms. The former perspective (genotypic) refers to the genetics and epigenetics of a crop and is more often used by developers, researchers, and breeders. The latter (phenotypic) refers to the observable traits and cultural uses of a crop (e.g., growing times, processing characteristics, cooking characteristics, flavor) and is used by most stakeholders in agricultural value chains, especially downstream. This project's references to varieties are primarily phenotypic though they relate back to genotypic seed research given the project's (i) greater focus on value-chain stakeholders vs. research and development, and (ii) greater emphasis on building market-side demand for increased value-chain "pull" vs. supply-side "push".

[93] Stress-tolerance is not absolute or binary, but is instead a matter of degrees. E.g., a "drought-tolerant" variety is not completely unaffected by drought, but is appreciably less affected by drought than traditional varieties are.

[94] The Cambodian Agricultural Research and Development Institute (CARDI) has released several rice varieties with varying tolerances to climatic and biotic stresses (e.g., rice blast, brown plant-hopper, drought, flood, and heat).

[95] harvested rice that retains the husk

[96] For more information on participatory varietal selection, see: <http://www.fao.org/plant-treaty/tools/toolbox-for-sustainable-use/details/en/c/1071271/>

[97] Contingent on PSC approval of supporting protocols

[98] E.g., if a model farmer follows the project's production guidance in good faith and the variety yields less than a designated percentage of stipulated regular returns, the project will reimburse that model farmer for the difference. This is not a broad-scale crop-insurance scheme.

[99] As above, the level at which FFS packages are selected will be revisited at inception and may be adjusted during implementation to fit the delivery context. Provisionally, districts have been selected in order to balance competing concerns for local relevance and resources (e.g., cost, materials, facilitators). During implementation, the PMU may identify operational efficiencies that would enable greater local discretion, or delivery challenges that necessitate greater standardization. Such issues and opportunities will be handled by the PSC.

[100] Mangum terraces are berms—typically parallel and roughly on contour—that are high enough to limit sheet flow (lower erosion, lower run-off, higher infiltration, better distribution of inputs), but low enough for farm equipment to pass over them. They are a much lower-cost and less technically/mechanically intensive alternative to land-levelling, particularly on slightly sloped or slightly undulating ground where levelling may be quite expensive.

[101] Under development as of October 2020.

[102] Fayon, 2019

[103] Although lending is a primary source of income for many ACs, they often have little if any standardization, regulation, oversight, or accountability regarding capitalization, lending requirements, etc. Even when guidelines exist on paper, they are often very flexible in practice. Within most ACs, there is little understanding of how to evaluate or improve the efficacy of lending practices.

[104] [http://www.sustainable-rice.org/assets/docs/SRP%20Assurance%20Scheme%20\(Final\).pdf](http://www.sustainable-rice.org/assets/docs/SRP%20Assurance%20Scheme%20(Final).pdf)

[105] [http://www.sustainable-rice.org/assets/docs/SRP%20Assurance%20Scheme%20\(Final\).pdf](http://www.sustainable-rice.org/assets/docs/SRP%20Assurance%20Scheme%20(Final).pdf)

[106] Stakeholder consultations during the PPG phase confirmed that technical assistance is a significant incentive for provisional adoption.

[107] Launched in 2009 in the plains of Dangrek Mountain in northern Cambodia, the IBIS Rice project seeks to provide farmers with access to organic rice markets in exchange for their compliance with a set of conservation practices. Farmers are organized into farmer groups, and their produce is marketed in domestic and international organic rice markets under the label "Ibis Rice", which fetches a price premium. In exchange, farmers have signed an agreement to stay away from areas earmarked for conservation. The project is implemented by WCS. <https://ibisrice.com/about-us/>

[108] Many production standards rely on the availability of certified seeds in order to ensure varietal purity, and many production contracts entail assumptions about reliable yields (which rely in part on reliable germination rates and stress-tolerance).

[109] Materials will be available in Khmer and English (for ease of adaption or adoption by international organizations) and translated into additional local languages upon request of GDA or GDLC via terms of the LOA.

[110] PGS is a low-cost, locally-based alternative to third-party certification, which targets smallholders and local markets. It involves peer farmers and other stakeholders (rather than third-party auditors) conducting audits of farms to check compliance with the agricultural standard in question. The PGS approach has been piloted by FAO and ADB in Cambodia and Lao PDR via the 'Small-scale Farmer Inclusion in Organic Agriculture Value Chain Developments through PGS' project (2015-2017), targeting organic production of vegetables. Source: FAO, *Participatory Guarantee Systems (PGS) for Sustainable Local Food Systems*; <http://www.fao.org/3/I8288EN/i8288en.pdf>

[111] Harmonization between Outputs 3.1.3. and 1.1.4. will likewise benefit from GIZ's experiences in establishing and strengthening guarantee and control systems towards international rice standards, including the SRP Standard. All of these efforts will be back-stopped by FAO, which has significant experience developing and supporting PGSs and PGS-supported products, including in Cambodia.

[112] As of finalization of this project document, SRP Standard 2.1 is current. However, as noted above, implementation will align with whichever version is locally adopted and supported by the PSC, with the understanding that (i) market-based incentives will likely follow the most recent version, yet (ii) shifts in standards or indicators may pose adoption/ compliance challenges or deviate from local priorities. Therefore, incorporation of evolving standards and indicators will be an evolving, participatory process.

[113] Under the SRP Assurance Scheme (finalized in August, 2020), managed by GLOBALG.A.P. (www.globalgap.org), farmers register in the GLOBALG.A.P. database, which collects relevant farm data in compliance with requirements of Global Data-protection Regulation (GDPR; gdpr-info.eu). SRP Standard's data-collection policy is set out in the Assurance Scheme document: [http://www.sustainableice.org/assets/docs/SRP%20Assurance%20Scheme%20\(Final\).pdf](http://www.sustainableice.org/assets/docs/SRP%20Assurance%20Scheme%20(Final).pdf)

[114] E.g., see: Cui, Z., Zhang, H., Chen, X., *et al.* (2018). Pursuing sustainable productivity with millions of smallholder farmers. *Nature* (Letters), 1-16. doi:10.1038/nature25785.

[115] <https://www.thegef.org/project/strengthening-capacity-agriculture-and-land-use-sectors-enhanced-transparency-implementation>

[116] Although ACs generally qualify as SMEs, they are referred to as a distinct sub-set of SMEs throughout this document, because they play a prominent role in local value-chain engagement.

[117] https://www.thegef.org/sites/default/files/documents/Cofinancing_Guidelines.pdf

[118] https://www.thegef.org/sites/default/files/publications/23469_LDCF_1.pdf

[119] https://www.thegef.org/sites/default/files/council-meeting-documents/EN_GEF.ME_C.55.inf_.01_Additionality_Framework_November_2018.pdf

[120] <https://www.ifac.org/system/files/publications/files/budget-reporting.pdf>

[121] https://www.thegef.org/sites/default/files/council-meeting-documents/EN_GEF.C.54.10.Rev_.01_Co-Financing_Policy.pdf

[122] ADB, *Cambodia: Tonle Sap Poverty Reduction and Smallholder Development Project - Additional Financing*, 2019. <https://www.adb.org/projects/41435-054/main>

[123] CAVAC, 'Productivity and Diversification?', <https://cavackh.org/productivity-and-diversification/>, 2019; CAVAC, 'Irrigation and water management?', <https://cavackh.org/irrigation-and-water-management/>, 2019; consultation with CAVAC representatives, 20 March 2019, Phnom Penh.

[124] SRP is a multi-stakeholder platform, co-convened by United Nations Environmental Programme (UNEP) and the International Rice Research Institute (IRRI) to promote resource efficiency and sustainable trade flows, production and consumption operations, and supply chains in the global rice sector. In 2015, it prepared a world-first standard for sustainable production of rice, which was subsequently trialed under various conditions during 2015-2019. SRP's National Chapter for Cambodia is currently being prepared, and certification under the standard is being piloted under a number of IFC-financed projects in Cambodia.

[125] Asian Development Bank, 'Climate-Friendly Agribusiness Value Chains Sector Project: Report and Recommendation of the President?', 2018.

[126] World Bank, 'International Development Association - project appraisal document on a proposed credit in the amount of SDR 65.50 million (US\$91.67 million equivalent) to the Kingdom of Cambodia for a Cambodia Agricultural Sector Diversification Project?', 2019; consultation with Mudita Chamroeun, World Bank, 21 March 2019.

[127] World Bank, 'Sustainable Landscape and Ecotourism Project (SLEPC) in Cambodia - Environmental and Social Management Framework (ESMF)?', 2019.

[128] ADB, 'Cambodia: Climate Resilient Rice Commercialization Sector Development Program?', <https://www.adb.org/projects/44321-013/main>, 2019.

[129] RIICE, 'About RIICE?', <http://www.riice.org/about-riice/about-riice/>, 2019.

[130] https://www.thegef.org/sites/default/files/council-meeting-documents/EN_GEF.STAP_.C.56.Inf_.04_Achieving%20more%20enduring%20outcomes%20from%20GEF%20investment_0.pdf

[131] *Ibid.*: 'Sustainability' is often confused with environmental sustainability and sustainable development, which aim to endure, but usually imply 'not living beyond our means' or 'not diminishing global environmental benefits'.

[132] https://www.thegef.org/sites/default/files/council-meeting-documents/EN_GEF_C.57_08_Towards%20Greater%20Durability%20of%20GEF%20Investments_0.pdf

[133] RDAB's risk-pricing rubrics are less flexible than those in the private sector.

1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.

Figure 18: Project target provinces, districts and communes

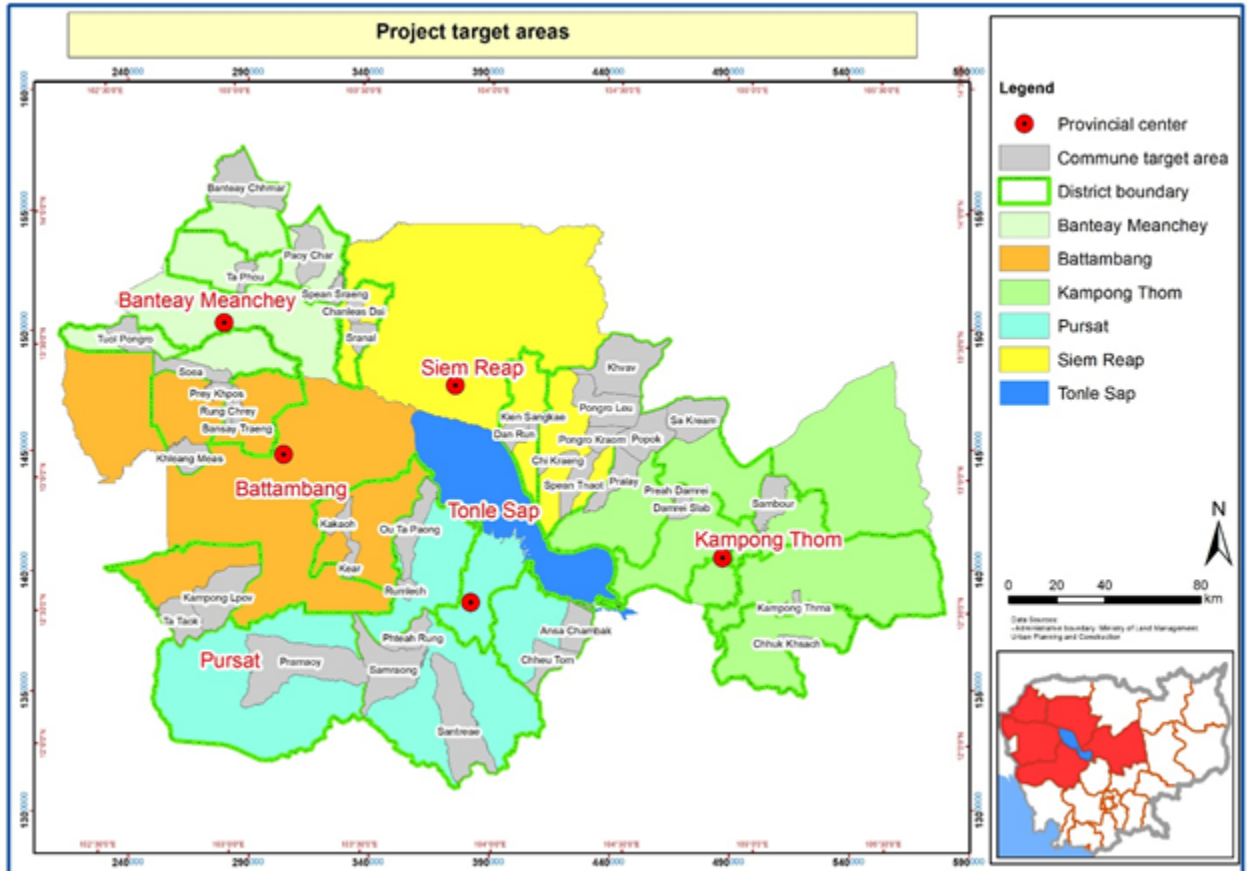


Table 8: Project target areas (provinces, district and communes)

Province (Code)	District		Commune		Site Type
	Name	Code	Name	Code	
Banteay Meanchey (01)	Mongkol Borei	0102	Soeu	10211	AC: Rice
					FG: Vegetables
	Phnum Srok	0103	Poy Char	10302	AC: Rice
					FG: Vegetables
					CPA: Kaun Khlaing (2 villages)
					CPA: Phum Nesat (7 villages)
			Spean Sraeng	10304	FG: Rice and vegetables
	Thma Puok	0107	Banteay Chhmar	10701	AC: Rice
					FG: Vegetables
	Svay Chek	0108	Ta Phou	10806	AC: Rice
					FG: Vegetables
	Malai	0109	Tuol Pongro	10905	AC: Rice
FG: Vegetables					
Battambang	Thma Koul	0202	Bansay Traeng	20209	FG: Rice and vegetables

Province (Code)	District		Commune		Site Type ₁
	Name	Code	Name	Code	
(02)			Rung Chrey	20210	AC: Samkey MeanChey
					FG: Vegetables
					PS
	Bavel	0204	Prey Khpos	20404	AC: Kdey Songkoem Kaksikor Khmer
					FG: Vegetables
					PS
			Khlaeng Meas	20407	AC: Reaksmeay Dounpov Chomroeun Phal
					FG: Vegetables
					PS
	Moung Ruessei	0206	Kear	20602	AC: Toekchet Kea Meanchey
					FG
					P
Kakoah			20607	AC: Apiwath KaksiKam KorKah	
FG					

Province (Code)	District		Commune		Site Type ¹
	Name	Code	Name	Code	
	Samlaut	0209	Ta Taok	20901	CPA: Tatok Okruoch (2 villages)
			Kampong Lpov	20902	CPA: O Chaum (2 villages)
Kampong Thom (6)	Baray	0601	Chhuk Khsach	60107	AC: Rice
					FG: vegetable group
	Kampong Svay	0602	Damrei Slab	60202	AC: rice
					FG
	Prasat Ballangk	0604	Sakream	60404	CPA: 1) O Chuhnchean; 2) Trapaing krork kor; 3) O Prasat; 4) Phnom Prang; 5) O Panha (4 villages)
					AC: Rice
	Prasat Sambour	0605	Sombour	60503	CPA: Boeng Tatel
	Santuk	0607	Kampong Thma	60703	AC: Rice
					FG: vegetable group
	Stoung	0608	Porpok	60808	CPA: Anlong kranh
Pralay			60809	AC: Rice	
Preah Damrei			60810	FG: vegetable group (home garden)	

Province (Code)	District		Commune		Site Type ¹
	Name	Code	Name	Code	
Pursat (15)	Bakan	1501	Ou Ta Paong	150105	AC: Rice and vegetable
			Rumlech	150106	AC: Rice and vegetable
	Krakor	1503	Ansa Chambak	150302	AC and FG
			Chheu Tom	150304	CPA: Teuk Thlak Chroek La Eang (4 villages)
					Rice Farmer Groups in Tas Chek, Chheu Tep, Cham Chas and Cham Thmey village
	Phnum Kravanh	1504	Santreae	150406	CPA: Raing Kvaeo
			Samraong	150407	AC: Rice and vegetable
	Veal Veang	1506	Pramaoy	15604	CPA: Tum Por
	Talou Sen Chey	1507	Phteah Rung	150702	AC: Rice
					FG: Rice
Siem Reap (17)	Chi Kraeng	1704	Chi Kraeng	170402	AC: Seed producing & rice producing
				FG: vegetable production group	
			Khvav	170404	CPA: Pnom Balang (6 villages)

Province (Code)	District		Commune		Site Type ¹				
	Name	Code	Name	Code					
			Pongro Kraom	170408	CPA: Domnak khnachtrach (4 villages)				
			Pongro Leu	170409	CPA: Prey Thom (4 villages)				
			Spean Tnoat	170412	AC: Seed producing & rice producing				
	FG: vegetable production group								
	Kralanh	1706	Chanleas Dai	170601	AC: Seed producing & rice producing				
					FG: vegetable production group				
			Sranal	170609	AC: Seed producing & rice producing				
					FG: vegetable production group				
					Soutr Nikom	1711	Dan Run	171103	AC: Seed producing & rice producing
									FG: vegetable production group
	Kien Sangkae	171105	AC: Seed producing & rice producing						
			FG: vegetable production group						

¹ AC: Agricultural Cooperative, CPA: Community Protected Area, FG: Farmer Group, PS: Private Sector

1c. Child Project?

If this is a child project under a program, describe how the components contribute to the overall program impact.

2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Civil Society Organizations Yes

Indigenous Peoples and Local Communities Yes

Private Sector Entities Yes

If none of the above, please explain why:

Please provide the Stakeholder Engagement Plan or equivalent assessment.

Please see Annex I2 for the Stakeholder Engagement Plan as uploaded below.

Please see Annex J regarding the assessment of issues pertaining to vulnerable groups and indigenous peoples.

In addition, provide a summary on how stakeholders will be consulted in project execution, the means and timing of engagement, how information will be disseminated, and an explanation of any resource requirements throughout the project/program cycle to ensure proper and meaningful stakeholder engagement

Please see Annex I2 (attached above) for the Stakeholder Engagement Plan, including an overview of stakeholder consultations during the PPG phase, planned stakeholder consultations during implementation, information dissemination, and the mechanism to redress stakeholders' grievances, if any.

Select what role civil society will play in the project:

Consulted only;

Member of Advisory Body; Contractor; Yes

Co-financier; Yes

Member of project steering committee or equivalent decision-making body; Yes

Executor or co-executor; Yes

Other (Please explain)

3. Gender Equality and Women's Empowerment

Provide the gender analysis or equivalent socio-economic assesment.

[**Note:** A more complete gender analysis is contained in the Gender Action Plan, attached below.]

The total population of five target provinces namely Pursat, Battambang, Bantey Meanchey, Siem Reap and Kampong Thom is 3,942,476 or 871,480 households of which 52 per cent of the population are females. From the figure, almost 14 per cent of the total households are women headed households.

Neary Rattanak IV 2014-2018 and V from 2019 are the main Royal Government of Cambodia's five-year strategic plan for Gender Equality and the Empowerment of Women in Cambodia. The strategy follows the five-year government's National Strategic Development Plan (NSDP) 2014-2018 and now 2019-2023. The Gender Mainstreaming Policy and Strategic Framework in Agriculture (GMPSFA) 2016-2020 was prepared based on Neary Rattanak strategic document.

Regarding on gender and climate change adaption in Cambodia, there are existing policy frameworks are in place such as Cambodia Climate Change Strategic Plan (CCCSP), Gender and Climate Change Strategic Plan (GCCSP) 2014-2023 and a second Gender and Climate Change Action Plan (GCCAP) 2019-2023 are being developed by MoWA, and Climate Change Priorities Action Plan for Agriculture, Forestry and Fisheries (CCPAP-AFF) developed by MAFF.

Agriculture sector in Cambodia is highly exposed to climate changes risks such as increasing temperature and fluctuation of rainfall patterns as a result of recurring droughts and floods. These events often damage the crops and livestock causing food insecurity. As a result, agricultural production and productivity are severely affected.

Field consultations were held by the project formulation team in five targeted provinces where a number of women groups/participants were met and discussed over challenges to gender in agriculture related activities, impacts from climate change, and potential livelihoods diversification of the project. The team consulted women from Agriculture Cooperatives (ACs), Community Protected Areas (CPAs), Community Water User Group (CWUG) and Provincial Departments of Women Affairs. As a result, it was found that the climate change issues were confirmed by both female and male farmers that occurred last few years. The monsoon has been delayed 2-3 months, so they have been experiencing of draught and lack of irrigation scheme in the locality. Women primarily female-headed households are extremely vulnerable to climate change impacts particularly drought.

Inequality of tasks and responsibilities of women and men and distribution of labor force participation (women and men) in rice related activities have been highlighted by the project formulation team.

The Gender Action Plan (GAP) of the project has been designed in accordance with the gender challenges identified by the field formulation and project framework that are in line with GEF and FAO's gender policy. The suggested GAP matrix of the project has been developed that are in line with the project components by indicating outputs, activities, indicators, timeline, responsibility and cost estimate for the period from 2021 to 2025.

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment?

Yes

Closing gender gaps in access to and control over natural resources; Yes

Improving women's participation and decision making Yes

Generating socio-economic benefits or services or women Yes

Does the project's results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Elaborate on the private sector's engagement in the project, if any.

The project will improve climate resilience of cultivation and processing of rice and other crops, which are essentially private-sector activities undertaken by smallholders, SMEs, and processing/ exporting companies. The private sector will therefore play a key role in the project, which takes a market-based approach to improving climate resilience through the engagement of local private sector by enhancing the adaptive capacities and livelihoods of the targeted communities through agribusiness and SME development, including through direct support to agricultural cooperatives (ACs) and producers'/ farmers' associations (P/FAs). Strengthening agribusiness opportunities through diversification (Component 2) will also contribute to local private sector development, particularly for women and

women-led households. The promotion of socially and environmentally sound contract farming, PGSs, and SRP assurance (Component 3) will necessarily involve smallholders, SMEs, and rice processors. PPG consultations with various processors?e.g., Amru Rice and Brico?have reconfirmed broad support from domestic processors for such standards, technical assistance, policy adjustments, and local investments that help to improve the reliability, quality, consistency, and marketability of crops, especially rice.

Additionally, on-going consultations with Mars Food Group similarly indicate dedicated and growing support for sustainability standards such as SRP, which help to improve local sustainability, increase climate resilience for producers and upstream production, increase product quality and marketability, and contribute to corporate sustainability targets.

The project will continue to take an approach that directly supports farmers and agricultural SMEs while providing broad support to larger private-sector actors without favoring individual companies (e.g., guarding against excessive consolidation toward local monopolies or monopsonies).

Finally, the project is expected to foster multi-national private sector engagement through the SRP members and network.

5. Risks to Achieving Project Objectives

Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.(table format acceptable):

The following section comprises descriptions of (i) external risks to the project and (ii) the identified environmental and social risks from the project.

5.a. Risks to the Project

Description of Risk	Risk w/o Mitigation[1]		Mitigation	
	Impact	Probability	Actions	Responsibility
Financial management and procurement systems slow and/ or ineffective	H	M	Financial management and procurement assessments are undertaken and manuals drafted as part of project management. Backstopping and relevant capacity development provided by FAO.	Manuals: GDA & GDLC Assessments: FAO

Description of Risk	Risk w/o Mitigation ^[1]		Mitigation	
	Impact	Probability	Actions	Responsibility
Weak capacity of extension officials to promote climate-resilient on-farm practices	M	H	Project will conduct trainings of trainers to build institutional governmental capacities, including materials for refreshers and to train future staff. Project will also conduct farmer field schools to build local capacities directly and improve the awareness of farmers about when and how to make effective and efficient use of extension services.	FAO via GIZ, IRRI, & WCS
Inadequate supply of premium fragrant rice seeds with tolerance to climatic and biotic stresses	H	M	PPG assessment of rice seed supply chain (Annex P) indicates that production will follow demand throughout the production chain (from Nucleus seeds to Certified seeds) as long as relevant varieties exist and technical assistance is sufficient. Therefore, the project will (i) strengthen the conduits of relevant market signals (e.g., production standards such as SRP, increased standardization and prevalence of production contracts) and (ii) ensure adequate capacities among extension services and ACs regarding available seed varieties and locally appropriate best-practice production techniques.	GDA & GDLC, supported by GIZ, IRRI, & WCS
Agricultural cooperatives default on contracts with processors, and vice versa	H	M	Contracts will be supported via agricultural cooperatives (ACs) rather than via individuals, thereby reducing the risks associated with individual defaults. The project will engage ACs with strong leadership, strong commitment, and good track records of delivery. Related training to ACs will emphasize the importance and benefits of established trade relationships for market access. The project will engage reputable rice processors with a legitimate interest in socially and environmentally sound contract farming. The project will also strengthen PDAFFs' capacities to monitor and arbitrate related disputes.	GDA & GDLC, supported primarily by GIZ

Description of Risk	Risk w/o Mitigation ^[1]		Mitigation	
	Impact	Probability	Actions	Responsibility
Low farmer interest in adoption, commitment, or perseverance regarding supported technologies and practices	M	H	The project will (i) reduce barriers to adoption and continued commitment, (ii) provide training to enable farmers to assess and value benefits that may be less visible than revenue (e.g., reduced costs, increased reliability of yields, reduced risk exposure, ecological resilience), and (iii) provide phased incentives (e.g., TA, local investments such as via CRIPs, market integration such as via contract farming, and market incentives such as price premia for SRP).	GDA & GDLC
Farmers prefer locally homogenous production (i.e., low local diversification), perpetuating locally homogenous risk profiles.	M	M	<p>The project will address this risk in multiple ways:</p> <ul style="list-style-type: none"> - Training on risk profiles and importance of diversification as a resilience strategy - Development of business plans and supportive value chains (market linkages) that buttress technical assistance, especially by reducing barriers to diversification and creating market "pulls" (i.e., supporting demand and demand efficiency). - Supporting diversification at levels both below and above intra-community diversification (e.g., household diversification and inter-community diversification). - Supporting approaches that strengthen climate resilience even in locally homogenous production systems (e.g., increased adoption of climate-resilient varieties, IPM, investments in climate-proofed agricultural infrastructure, production contracts). 	GDA & GDLC with TA support from GIZ, IRRI, & WCS

Additionally, COVID-19 poses evolving circumstances, risks, and constraints that might influence the project's technical approaches, and operational delivery over the course of the project. A recent rapid assessment of COVID-19's potential effects on agriculture and food security in Cambodia^[2] found that COVID-19 is exacerbating many of the risks and vulnerabilities noted above (see Section 1.a.1. Climate-related Risks and Vulnerabilities), such as poverty, high household debt, and inefficiencies in agricultural value chains. Many of the report's recommendations are directly supported by this project, such as support to smallholders via assets for production and technical assistance, guidance on selecting production

activities, increased sustainable production of rice, agricultural diversification, improved access to diversified financial resources, engagement of TWGs in formulation of adaptive policies, gender-mainstreaming in the response, ensured continuity and function in food value chains (especially rice), improved agricultural market networks, continued efforts to broaden access of Cambodian farmers to international markets (e.g., via broader adoption of internationally recognized standards), etc. Overall, this project's central aim of strengthening climate-change adaptation and resilience builds generalized resilience against many kinds of shocks, including pandemics (see Sections 1.a.1. and 1.a.5.).

Furthermore, the project's institutional arrangements—particularly via the PSC—ensure that the project's delivery remains both flexible and results-based. These adaptive arrangements ensure that the project's technical approaches continue to reflect up-to-date priorities and that the project's operational approaches reflect evolving circumstances and requirements (e.g., regarding public-health guidelines).

5.b. Risks from the Project ? ESM Plan

Please see Annex I1 for a copy of the PIF-stage *Environmental and Social Risk Assessment*.

Risk Identified at PIF Stage	Risk Classification	Mitigation Actions
1.5 ? Risks associated with improvements to irrigation schemes	Moderate	N/A ? During the PPG phase, it was determined that the project would more effectively contribute to CCA via support to other forms of water management. At the local level, the project will engage with some farmers who have access to irrigation and will engage with some farmer water user groups (FWUGs) as local institutional counterparts (e.g., for improved seed production and local institutional support for agro-ecological practices), but not with the aim of improving irrigation schemes <i>per se</i> .

<p>3.2.1 ? Risks associated with the importation or transfer of seeds and/or planting materials for cultivation</p>	<p>Moderate</p>	<p>The project will support the multiplication of certified seeds from domestic breeders for foundational and registered seeds (particularly CARDI and GDA). The project will also support the increased use of certified seeds. Therefore, much of the project's seed-related activities are associated with strengthening the domestic supply of quality seeds.</p> <p>The project will use local seed-supply systems, particularly those administered by CARDI and GDA. In all cases of seed procurement, appropriate technical clearances will be sought.</p> <p>The importation of seeds is not foreseen as part of this project. However, any imported varieties used by the project will be based upon recommendations from the technical team implementing the project to enhance farmer resilience. Should this situation arise, appropriate technical clearances will be sought.</p> <p>Governmental operational partners?particularly GDA, given its role in oversight of seed-quality certifications?will undertake procurement of seeds and planting materials/ equipment in line with relevant laws and regulations, including compliance with national commitments under the Convention on Biological Diversity (CBD), the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture (PGFRA), International Plant Protection (IPP) Convention, and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGFRA).</p>
<p>3.2.2 ? Risks associated with the importation or transfer of seeds and/or planting materials for research and development</p>	<p>Moderate</p>	<p>N/A ? The project does not envisage importation or transfer of seeds or planting materials for research and development. The project will make use of seeds (particularly stress-tolerant and climate-adaptive varieties) developed and supported by CARDI, as well as high-market-value varieties for which foundation and registered seeds are produced via official, governmentally sanctioned protocols and supply chains. (Refer to prior row.)</p>

<p>5.1 ? Risks associated with the procurement, supply, and/ or use of pesticides on crops, livestock, aquaculture, or forestry</p>	<p>Moderate</p>	<p>The project does not call for the procurement or supply of pesticides. It also does not call for the use of pesticides, though it will offer farmer field school modules on integrated pest management (IPM). Additionally, communities may choose to pursue standards-based production that entails guidance, limitations, or prohibitions on the use of various chemical inputs, including pesticides. Therefore, the project's activities associated with this issue pertain entirely to capacity development for responsible use, favoring agro-ecological and nature-based solutions when practicable.</p> <p>In that context, it is unlikely but possible that pesticides could be procured as part of FFS curricula or small-scale demonstrations regarding IPM or crop management.</p> <p>If the project at some point considers the procurement of or provision pesticides, clearance procedures will be followed according to the guidance provided under ESS5 in FAO's ESM Guidelines and, as advised via the PSC, FAO's Plant Production and Protection Division will be consulted.</p>
<p>5.2 ? Risks associated with the provision of seeds or other materials treated with pesticides (in the field and/ or in storage)</p>	<p>Moderate</p>	<p>As above, the project's current formulation does not call for or foresee the provision of seeds or other materials that have been treated with pesticides. In fact, the project favors agro-ecological and nature-based solutions that reduce reliance on synthetic chemical inputs.</p> <p>If the project at some point considers the provision of seeds treated with pesticides (e.g., potentially as a small-scale FFS comparison plot), clearance procedures will be followed according to the guidance provided under ESS5 in FAO's ESM Guidelines and, as advised via the PSC, FAO's Plant Production and Protection Division will be consulted.</p>

<p>7.5 ? Risks associated with operation in areas or value chains with presence of labor migrants or that could potentially attract labor migrants</p>	<p>Moderate</p>	<p>The project's participatory approach is the primary mechanism for ensuring sensitivity and responsiveness to the project's effects on vulnerable groups. Migratory laborers are important stakeholders in the agricultural value chains in the Tonle Sap Region. As such, they and their interests will be relevant as part of the project's multi-stakeholder value-chain networks. Strengthening these networks</p> <p>Laborers are also likely to benefit from the project's efforts to improve governance of value-chain interactions, such as through (i) greater clarity and formalization of contract farming, which provides structure that allows more predictability in labor arrangements, and (ii) strengthened mechanisms for redress of contract breaches.</p> <p>The PSC's TORs also call for the inclusion of CSOs in order to help ensure additional insights regarding the project's effects on potentially vulnerable groups, including migrant laborers.</p> <p>The project will support various forms of standards-based production, and many related standards include labor standards. (E.g., see SRP Standard 2.1, above.)</p> <p>Please refer to Section II.10 of this document for the project's support of decent rural employment.</p> <p>Finally, the project aims to improve stakeholders' climate-change adaptability. As noted in the prodoc's background assessment of climate-change vulnerabilities, a recent analysis[3] found that Cambodia's crop sub-sector is the economic sector expected to result in the greatest loss of GDP due to climate change, and that the largest portion of that predicted loss will come from loss of labor productivity. Thus, by strengthening the climate adaptability of Cambodia's agricultural sector (particularly its crop sub-sector), the project also contributes significantly to reducing the climate vulnerabilities of agricultural laborers.</p>
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7.6 ? Risks associated with direct employment of workers	Moderate	FAO's portion of execution will follow UN/FAO employment standards, as indicated via employment contracts and periodic reviews of working conditions and grievances. Operational partners' employment practices will follow governmental standards and policies as assessed in operational partnership assessments and per respective operational partnership agreements.
9.1 ? Risks associated with indigenous peoples living outside the project area where activities will take place	Low	Project target areas in Siem Reap and Kampong Thom are home to indigenous communities that may be integrated as project beneficiaries. The project is not expected to conduct any activities that pose risks or threats to these communities.
9.2 ? Risks associated with indigenous peoples living in the project area where activities will take place	Moderate	<p>Please see Annex J for the Report on the Assessment of Vulnerable Groups and Indigenous Peoples, as well as associated action plans. In brief, the analyses suggest that the project poses no appreciable risks to indigenous communities, though there are opportunities to ensure that the project maximizes benefits to these communities, such as with respect to their socio-economic conditions, their control over or access to natural resources, and their levels of power in decision-making and planning.</p> <p>The project has followed and will continue to follow the requirements of ESS9 regarding indigenous peoples and cultural heritage, including FPIC. Throughout the project-design phase, the design team and operational partners have consulted extensively with local communities (including indigenous communities; both directly and with their various advocates) to understand their priorities, concerns, vulnerabilities, and perspectives. (See Annexes I2 and J.)</p> <p>As with all stakeholders and local communities with whom the project will engage, indigenous people will have empowered and participatory roles in the extent and types of activities conducted in partnership with their communities. The project will also ensure that all materials are available in local languages.</p>
9.4 ? Risks associated with project locations in an area where cultural resources exist	Moderate	The project areas will be in areas near important cultural heritage sites. The project is not expected to pose risks to these sites. In fact, it is expected to yield benefits for nearby protected areas via improved local management of natural/ biophysical resources. Additionally, by improving economic conditions and climate resilience, the project will strengthen local communities' resources for protecting and preserving these sites. The requirements of ESS9 regarding indigenous peoples and cultural heritage will be followed throughout the project.

[1] H: High; M: Moderate; L: Low.

[2] MAFF, CARD, and FAO. 2020. *Rapid Assessment of COVID-19 Impact on Agriculture and Food Security in Cambodia*. Phnom Penh, FAO.

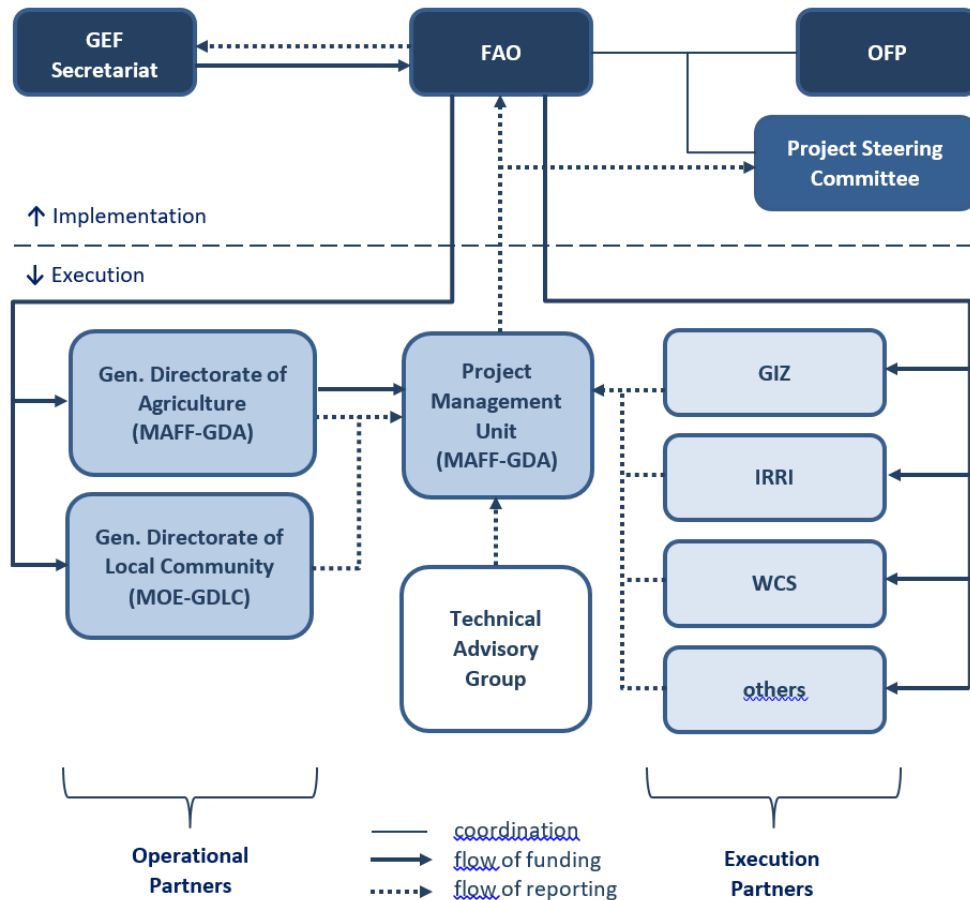
[3] UNDP. (2018, May). *Addressing Climate Change Impacts on Economic Growth in Cambodia*. http://www.kh.undp.org/content/cambodia/en/home/library/environment_energy/modelling-of-climate-change-impacts-on-growth.html

6. Institutional Arrangement and Coordination

Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

6.a. Institutional Arrangements for Project Implementation

Figure 19: Overview of Project's Organizational Structure



Overall responsibility for execution, coordination, and delivery of the project will be held by (i) the **General Directorate for Agriculture (GDA) within the Ministry of Agriculture, Forestry, and Fisheries (MAFF)** and (ii) the **General Directorate of Local Community (GDLC) within the Ministry of Environment (MOE)**. GDA and GDLC will act as the lead executing agencies and will be responsible for the day-to-day management of the project's results entrusted to them in full compliance with all terms and conditions of the Operational Partnership Agreements signed with FAO. As **operational partners (OPs)** of the project, GDA and GDLC are responsible and accountable to FAO for the timely implementation of the agreed project results, operational oversight of implementation activities, timely reporting, and effective use of GEF resources for the intended purposes, in line with FAO's and GEF's policy requirements. The international partners GIZ, IRRI and WCS, and others will provide additional technical and operational support to GDA and GDLC to fill the capacity gaps and the activities under each partners will be closely coordinated through joint planning and implementation under the umbrella of the Project Management Unit (PMU).

The government will designate a **National Project Director (NPD)**, who will be responsible for coordinating the activities with all national bodies related to the project's different components and partners, and for supervising and guiding the National Project Coordinator (NPC; see below) on the government's policies and priorities. It is provisionally anticipated that RGC will designate the Director General of GDA as the NPD.

The NPD (or other governmentally designated person) will chair the **Project Steering Committee (PSC)**, which will be the main governing body of the project. Annex M presents the Terms of Reference and provisional membership of the Project Steering Committee.

The project's **Technical Advisory Group (TAG)** will ensure coordinated, relevant technical guidance to the project. The TAG will also provide a basis for technical and operational coordination between stakeholders for climate-change adaptation in the agricultural sector, as well as provide technical guidance to the PSC. Annex N presents the Terms of Reference and provisional membership of the TAG.

The **Project Management Unit (PMU)**, located within GDA, will be co-funded by RGC and the LDCF. The main functions of the PMU, following the guidance of the PSC, are to ensure overall efficient management, coordination, implementation, and monitoring of the project through the effective implementation of the annual work plans and budgets (AWP/Bs). The PMU also serves as the Secretariat of the PSC.

The PMU will be led by the **National Project Coordinator (NPC)**, who will be in charge of daily management, coordination, delivery, administration, and technical supervision of the project, on behalf of the OPs and in accordance with PSC decisions. As such, the NPC will ensure that the PMU meets the following obligations (among others that may be determined by the PSC):

- i) acting as Secretariat to the PSC (see duties in PSC TORs, Annex M);
- ii) coordinate engagement with the project's Technical Advisory Group (TAG; see relevant duties in TAG TORs, Annex N);
- iii) coordinating with relevant initiatives;
- iv) ensuring a high level of collaboration among participating institutions and organizations at the national and local levels;
- v) ensuring compliance with all OPA provisions during the implementation, including on timely reporting and financial management;
- vi) coordinating and closely monitoring implementation of the project's activities;
- vii) tracking the project's progress and ensuring timely delivery of inputs and outputs;
- viii) providing technical support and assessing the outputs of the project's national consultants hired with LDCF funds, as well as the products generated in the implementation of the project;
- ix) approving and managing requests for provision of financial resources using approved formats (see OPA annexes);
- x) monitoring financial resources and accounting to ensure accuracy and reliability of financial reports;

- xi) ensuring timely preparation and submission of requests for funds, financial reports, and progress reports to FAO in accordance with OPA reporting requirements;
- xii) maintaining documentation and evidence that describes the proper and prudent use of the project's resources as per OPA provisions, including making available this supporting documentation to FAO and designated auditors when requested;
- xiii) implementing and managing the project's monitoring and communications plans;
- xiv) organizing project workshops and meetings to monitor progress;
- xv) preparing the Annual Budget and Work Plan with inputs from and under coordination with the execution partners;
- xvi) submitting the six-monthly Project Progress Reports (PPRs) with the AWP/B to the PSC and FAO;
- xvii) preparing the first draft of the Project Implementation Review (PIR);
- xviii) supporting the organization of the mid-term and final evaluations in close coordination with the FAO Budget Holder (BH) and the FAO Independent Office of Evaluation (OED);
- xix) submitting the OP quarterly technical and financial reports to FAO and facilitate the information exchange between the OP and FAO, if needed; and
- xx) informing the PSC and FAO of any delays and difficulties as they arise during the implementation to ensure timely corrective measures and support;
- xxi) receive audit and spot check missions as per the approved risk mitigation and assurance plan.
- xxii) provide draft inputs for project terminal report.

The project's core activities will be executed primarily by GDA and GDLC, augmented by technical and operational support from **GIZ**, **IRRI**, and **WCS** to build on baseline initiatives. Additional governmental agencies (e.g., MOWRAM, MoWA, MoE's related General Departments) and other partners will provide additional project-funded support where appropriate.

As the project's **GEF Agency (or Implementing Agency; IA)**, **The Food and Agriculture Organization of the United Nations (FAO)** will provide project-cycle management and support services as established in the GEF Policy. As the GEF IA, FAO holds overall accountability and responsibility to the GEF for delivery of the project's results. FAO will use the associated GEF agency fees to fund support from three different roles:

- the **Budget Holder (BH)**, typically the FAO Country Representative, will provide FAO's most immediate and direct fiduciary oversight of the project;
- the **Lead Technical Officer (LTO)** will provide oversight and support to the project's technical work in coordination with governmental representatives, particularly via the PSC;
- the **Funding Liaison Officer (FLO)** will monitor and support the project cycle to ensure that the project's conduct and reporting accord with agreed standards and requirements, particularly for GEF.

FAO's responsibilities as IA include:

- ? Administer funds from GEF in accordance with FAO's rules and procedures;
- ? Oversee the project's implementation in accordance with the project document, work plans, budgets, agreements with co-financiers, Operational Partner Agreement(s), and other rules and procedures of FAO;
- ? Provide technical guidance to ensure that appropriate technical quality is applied to all activities concerned;
- ? Conduct at least one supervision mission per year;
- ? Report on the project's progress to the GEF Secretariat and Evaluation Office through the annual Project Implementation Review, the Mid Term Review, under the responsibility of the Budget Holder, the Terminal Evaluation under the responsibility of FAO's Office of Evaluation (OED), and the Project Closure Report; and
- ? Deliver required financial reports to the GEF Trustee.

Annex P presents the Terms of References of the key project staff and consultants.

6.b. Coordination with other relevant GEF-financed projects and other initiatives

Mechanisms of coordination

The project's design ensures efficient and continuous coordination through several mechanisms.

1. Proactive and on-going coordination with relevant stakeholders and related initiatives, beginning in the project's initial formulation, continuing through the PPG phase, and extending for the duration of the project's planned implementation.
2. Involvement of broad execution partners, including GDA (hosting the PMU) and GDLC as operational partners (i.e., government-led execution), such that the project is ideally positioned to collaborate or coordinate with any related initiatives (current or future) pertaining to agriculture or Community Protected Areas. Additionally, the project will be executed via GIZ, IRRI, and WCS, such that several relevant agencies and organizations are directly engaged for coordination with critical baseline initiatives.

3. Explicit cofinancing arrangements with related projects.
4. Explicit, direct, funded engagement with RGC's leading organizational mechanism for inter-ministerial and inter-sectoral climate-related coordination: the Cambodia Climate Change Alliance (CCCA).
5. Broad organizational membership in the Project's Steering Committee (PSC), ensuring that influential representatives of relevant agencies are intimately engaged in the project's strategic direction and tactical delivery, and ensuring flexibility to adapt to evolving constraints and opportunities.
6. Similarly, broadly inclusive organizational membership in the project's Technical Advisory Group (TAG), ensuring that relevant agencies, technical institutions, non-governmental partners, and other organizations with relevant initiatives are frequently engaged regarding the project's technical approaches and operational delivery.

It is important to note that coordination, collaboration, and harmonization are on-going processes as the pipeline of initiatives progresses?projects end, new projects start, national priorities shift, exigent circumstances present new opportunities, new technologies and best practices emerge, etc. Therefore, the lists of baseline initiatives contained in this project document are considered indicative rather than exhaustive, and greater emphasis has been placed on the mechanisms of coordination and adaptability than on the specific initiatives with which this project is currently projected to harmonize.

Coordination with specific projects

The project's planned coordination with other relevant GEF-financed projects and other initiatives is described above in Section 1.a.4. regarding baselines and the project's incremental cost reasoning and additionality. The project will coordinate with relevant agencies and projects to avoid overlap and double-spending of resources, and to maximize project outcomes from shared best practices and lessons learned.

In particular, close coordination with the GCF-supported **Climate-Friendly Agribusiness Value Chains Sector Project** and the **PPCR project in Pursat Province** will be ensured to enhance complementarity, maximize the uptake of successful practices and avoid duplication of climate mainstreaming activities. Coordination is on-going with ADB to ensure continued complementarity and synergies among the projects. Additionally, alignment will be assured by the fact that MAFF and MOE are executing agencies for both the LDCF and GCF projects.

In addition to the initiatives listed above (including in **Section 1.a.4.**), this project will coordinate with or build up on the following projects:

FAO: Public-Social-Private Partnerships for Ecologically Sound Agriculture and Resilient Livelihoods in the Northern Tonle Sap Basin (PEARL): FAO has submitted a concept note for PEARL (requested GCF funding: 34,485,000 USD; projected duration: 8 years), which will enhance the climate

resilience of farmers and farming communities in the Northern Tonle Sap Basin (NTSB; see map, below) by (i) improving agro-meteorological forecasting and related advisory services; (ii) raising awareness of climate-related risks and climate-resilient agricultural options; (iii) increasing options for climate-adapted, sustainable, higher-value, and diversified agriculture (including support and TA to farmers, producer organizations, SMEs, etc.); (iv) improving farming and environmental management practices; and (v) improving the associate enabling environment via policies, capacities, and institutional coordination.

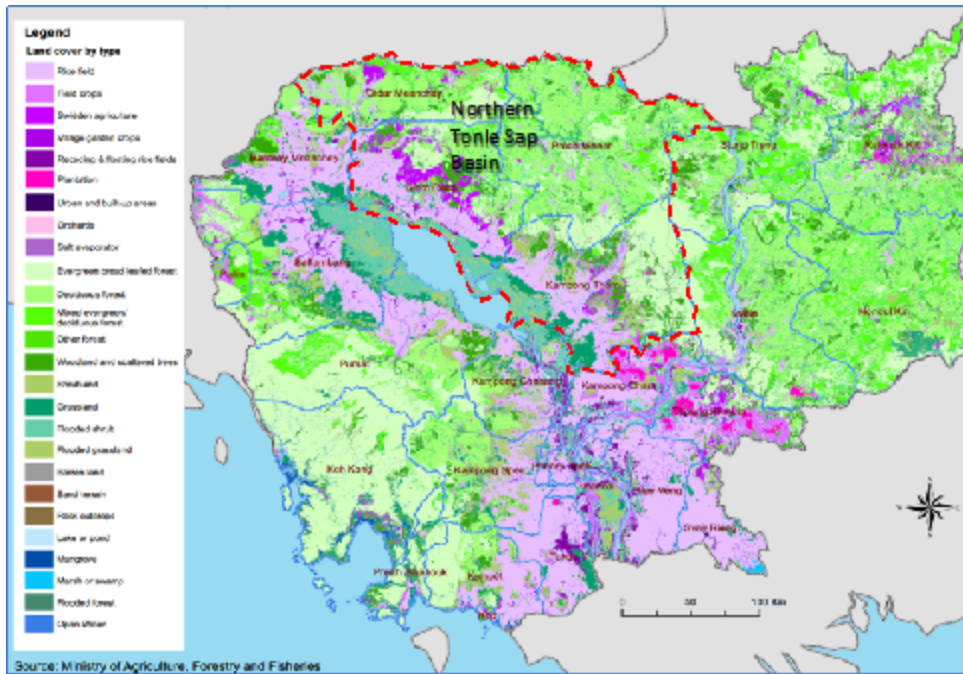
As proposed, PEARL will be implemented via three components:

- ? Component 1: Enhance farmers' capacities to manage climate impacts and related disaster risks.
- ? Component 2: Provide market incentives through agricultural certification programs for farmers and other value-chain actors to adopt climate-resilient and sustainable technologies and practices.
- ? Component 3: Ensure enabling conditions for effective public-social-private partnerships (PSPPs) through a coherent and robust policy, legal, and institutional framework.

PEARL's expected outcome is the adoption of climate-resilient, sustainable, high-value, and diversified agricultural practices by farmers and local communities in the NTSB through a market-based approach. This approach will ensure the long-term sustainability of adopted practices beyond the life of the project.

In addition to the significant alignment between the technical and operational approaches of PEARL and this LDCF project, PEARL's targeted area (the Northern Tonle Sap Basin) overlaps with this LDCF project's targeted area in Siem Reap and Kampong Thom (see map, below).

Figure 20: Map of Northern Tonle Sap Basin (PEARL project area)



MAFF, MOE, MOWRAM, and FAO are all expected to play significant roles in PEARL's further development and eventual delivery. Therefore, there are clear opportunities for direct, on-going coordination and complementarity between the two projects.

Given the importance of harmonizing with PEARL, the following table presents expected technical alignments and complementarity between the two projects.

Table 9: Expected Technical Alignments with PEARL

CCA Dimension[1]	Sub-Category by Agroecological Dimension	Projects		Complementarity/ Core Linkage
		PEARL (GCF)	Promoting Climate-resilient Livelihoods ... Tonle Sap Region (LDCF)	
Project Target Areas and Crops	Geographical coverage	<p>? Northern Tonle Sap Basin (NTSB), encompassing Kampong Thom (KT), Oddar Meanchey (OM), Preah Vihear (PV) and Siem Reap (SR).</p> <p>? Seven target districts (TBD) ? potential candidates include Prasat Balang & Suntut, KT, Samraong & Anlong Veng, OM, Kulen & Chhaeb, PV, Prasat Bakong, SR</p>	<p>? Pursat, Battambang, Bantey Meanchey, Siem Reap, and Kampong Thom provinces, primarily in the rice-growing areas.</p> <p>? Tentatively proposed to have 8 to 9 target communes in each province for an estimated total of 43 communes.</p> <p>o Example proposed districts in Kampong Thom province: Baray, Kampong Svay, Prasat Ballangk, Prasat Sambour, Santuk, and Stoung</p> <p>o Example proposed districts in Siem Reap province: Chi Kraeng, Kralanh, and Soutr Nikom</p>	<p>? Landscape agro-ecological connectivity (i.e., agriculture production, environment, social, governance and cooperation) between the upper watershed of Stung Siem Reap, Stung Sen and Stung Sreng where PEARL operates and downstream areas around the Tonle Sap where PRRC operates.</p> <p>? PRRC work in Kampong Thom will likely include some CPAs in slightly upland areas.</p>

CCA Dimension[1]	Sub-Category by Agroecological Dimension	Projects		Complementarity/ Core Linkage
		PEARL (GCF)	Promoting Climate-resilient Livelihoods ... Tonle Sap Region (LDCF)	
	Target Crops/ Value Chains	? Upland Organic Rice (PV), Cashew Nuts (KT & PV) , Mangoes (OM) and Vegetables (PV & SR)	? Lowland and upland rice (both SRP and non-SRP) for five provinces; cash crops (mangoes, cashews , cassava, etc.) for five provinces; GAP vegetable (SR, BTB, BMC) ; poultry (SR).	? PEARL supports/ facilitates access to appropriate agro-/ hydro-meteorological and early-warning services, agricultural certification program (GI registration, GAP, HACCP, organic registration process) to the existing 300 ACs, association and SMEs. ? PRRC supports cashews as part of support for climate-resilient production (perennials, agroforestry, conservation agriculture) and livelihood diversification. PRRC supports horticulture/ vegetable production for climate resilience via livelihood diversification and food/ nutrition security.

CCA Dimension[1]	Sub-Category by Agroecological Dimension	Projects		Complementarity/ Core Linkage
		PEARL (GCF)	Promoting Climate-resilient Livelihoods ... Tonle Sap Region (LDCF)	
1. Natural Resources and Ecosystems	Agrobiodiversity	<p>? Provide enhanced market incentives to support organic rice farmers in PV where its relatively hilly topography keeps paddy fields small and fragmented with intersecting natural buffers.</p> <p>? Promote IWM, IPM, CamGAP, GI and organic certification schemes that increase agrobiodiversity (e.g., increased natural enemies, increased range and availability of food sources and natural barriers)</p>	<p>? Via FFS and in part via promotion of SRP, promote climate-adaptive practices?including WRM, IPM, INM, and GAP?that encourage incorporation of agrobiodiversity (e.g., crop diversification, buffer plantings, intercropping, etc.) and provide co-benefits for biodiversity (e.g., Bengal? Florican in KT, deer in Ang Trapaing Thmar of BMC, and CPA-associated upland areas of KT and SR).</p>	<p>? IPM, GAP, and INM (though PEARL might not call it INM)</p>
	Soil Enrichment	<p>? Establish demonstration sites & facilities with model farmers/ACs/FAs/SMEs to showcase best practices, including intercropping, composting and SRI as part of IPM and certification processes to increase soil organic matter and nutrients in order to reduce chemical fertilizer use.</p>	<p>? Demonstration sites, conservation agriculture, SRP, IWRM, INM</p> <p>? Via FFS, model farmers, ACs, FAs, CPAs, FWUGs</p> <p>? Some support for PGS as transitional support for SRP</p> <p>? Technical assistance and investments, largely via menus of packages (equipment, facilities, land improvements)</p>	<p>? Similar target stakeholder groups and delivery mechanisms (model farmers, ACs, and FAs)</p> <p>? Similar technical frame, though possibly with different labelling (conservation agriculture, intercropping)</p>

CCA Dimension[1]	Sub-Category by Agroecological Dimension	Projects		Complementarity/ Core Linkage
		PEARL (GCF)	Promoting Climate-resilient Livelihoods ... Tonle Sap Region (LDCF)	
2. Agricultural Production Systems	Climate Mitigation	<p>? Support community protected areas & community forests in integrating mango & cashew into agroforestry in KT & OM as a diversification option to reduce land conversion and integrated watershed management (IWM) in critical catchment and ecologically sensitive areas (ca. 10,000 ha).</p> <p>? Promote CamGAP, IPM and organic certification in cashew, mango and organic rice production to reduce chemical input (i.e. N₂O).</p> <p>? Promote the use of solar panels and micro hydropower generators to pump water into storage tanks for micro-irrigation systems.</p>	<p>? PPRC's CCM benefits are co-benefits of CCA</p> <p>? Livelihood diversification options include agroforestry and perennials, particularly in CPAs (primarily in KT, secondarily in BMC)</p> <p>? Conservation agriculture approaches will increase soil-based carbon sequestration</p> <p>? Improved crop residue management (primarily for rice) resulting in reduced burning</p> <p>? INM may result in reduced NO_x emissions</p> <p>? SRP adoption may decrease land-clearing/land-conversion</p> <p>? Increased agricultural yields will decrease economic carbon intensity</p>	<p>? Agroforestry, perennials</p> <p>? Conservation agriculture</p> <p>? Reduced land conversion</p> <p>? INM</p> <p>? CPAs in KT</p>

CCA Dimension[1]	Sub-Category by Agroecological Dimension	Projects		Complementarity/ Core Linkage
		PEARL (GCF)	Promoting Climate-resilient Livelihoods ... Tonle Sap Region (LDCF)	
	Climate Resilience (Farm System)	<ul style="list-style-type: none"> ? Establish crop-specific integrated hydrometeorological forecasting, early warning, farm management, including DRM and agroecological adaptation approaches & market advisory services in relation to climate change for cashew, mango, organic rice & vegetable farmers and other value chain actors. ? Assessment of soil and agroclimatic suitability of the crops for long-term adaptation strategy development. ? Demonstrate with model farmers/ACs/FAs/ SMEs best practices, including stress-tolerant varieties, small-scale irrigation systems, on-farm & homestead multi-use ponds, natural canals, solar water pumps & storage tanks, micro-irrigation). 	<ul style="list-style-type: none"> ? Integration of AEZ maps, VRAs, and business plans for resilient farm systems (e.g., cropping systems that integrate rice, market gardens, and value-addition) ? Support for increased supply and use of climate-resilient rice varieties, especially for heat and drought tolerance. ? Livelihood diversification (market gardens, intercropping, crop diversification, dry-season cropping, value addition) ? Support via FFS and to ACs/ FAs, including in CPAs; model farmers; demonstration sites ? Support the rehabilitation or construction of small-scale community-based water retentions (village pond, commune water pond or lake/channels, etc.); improve and advise on water harvesting in potential CPA sites (like clean water pipe connection from the spring/water head) ? Adoption of (laser) land leveling for rice producers in BTB and BMC. Possibility to reach out to small-holder farmers with service provider arrangements. 	<ul style="list-style-type: none"> ? PRRC?s work on agrometeorological systems relates to (i) assessments of local access and utility (e.g., extension services, farmers, ACs), (ii) packages of TA and equipment for basic local agromet functions, and (iii) improved access and use by MAFF and MoE in coordination with MoWRAM. PRRC?s work may complement PEARL?s work on content development and dissemination (?; e.g., app?), particularly for crop-specific advisories. ? Likely overlap re: development and application of AEZ maps, crop suitability maps, and use in local adaptation planning. ? Overlaps re: stress-tolerant crop varieties (esp. for rice), on-farm water managements (e.g., ponds, storage, rainwater harvesting, water conservation, micro-irrigation) ? Similar delivery mechanisms may enable operational efficiencies (e.g., via delivery partners, materials, TOTs, FFSs)

CCA Dimension[1]	Sub-Category by Agroecological Dimension	Projects		Complementarity/ Core Linkage
		PEARL (GCF)	Promoting Climate-resilient Livelihoods ... Tonle Sap Region (LDCF)	
	Agrochemical Exposure	<p>? Promote IPM, CamGap, GI, organic, HACCP, ISO 22000, SPS certification schemes to curb the use of agricultural chemicals, including chlorothalonil, cypermethrin, metamorphos and permethrin that are still found in agricultural products although illegal in Cambodia.</p> <p>? Develop improved and innovative traceability & labelling practices in partnership with public & private actors, including consumers (e.g., upgraded testing capacities, an information-sharing platform)</p>	<p>? IPM, GAP, SRP, INM</p> <p>? Capacity development (TA) locally (farms, ACs, CPAs) via FFS and for subnational support (e.g., extension)</p>	<p>? PEARL?s work on the enabling environment and within the value chain will be complemented by PRRC?s work with producers and subnational support (e.g., extension).</p> <p>? PRRC?s support of SRP provides a broader production framework (specific to rice) that can also lead to certification and traceability.</p>

CCA Dimension[1]	Sub-Category by Agroecological Dimension	Projects		Complementarity/ Core Linkage
		PEARL (GCF)	Promoting Climate-resilient Livelihoods ... Tonle Sap Region (LDCF)	
	Value Addition/ Market Instruments/ Investment	<ul style="list-style-type: none"> ? Prepare & implement a roadmap for each of the four crops for accessing premium markets. E.g., <ul style="list-style-type: none"> - Cashew nuts & mangoes under CamGAP & organic certification, - Organic rice through GI & Ibis Rice, - Vegetables through CamGAP, organic & W+ [2] - Meeting international standards for value-added processing of cashew nuts & mangoes through HACCP & ISO 22000, - Export quality assurance through SPS, - Non-certification options through contract farming & direct sales to local retailers, restaurants & hotels. ? Support the development of favourable loan, financial assistance packages & crop insurance programs for farmers, ACs, FAs & SMEs through PSPPs. 	<ul style="list-style-type: none"> ? Business planning <ul style="list-style-type: none"> o Development and provision of business plans for climate-resilient farm systems (e.g., crop diversification options; dry-season market gardens) o Capacity-development for farmers and ACs re: business planning and financial literacy ? Contract farming <ul style="list-style-type: none"> o Capacity development o Drafting of template contracts o Facilitation via negotiation and support mechanisms, including for performance assurance mechanisms o SRP rice, CamGAP vegetables, etc. o Pilot support to PGS as mechanism to facilitate contracts ? Develop/ pilot phone app to facilitate market linkages between producers (farmers/ ACs) and buyers/ retailers. ? Strengthen connections between producers (e.g., vegetables, cash crops) and markets (esp. SR). Strong potential for FAs for CamGAP vegetables, particularly in dry season. 	<ul style="list-style-type: none"> ? PEARL's work on credit packages and terms will be complemented by PRRC's capacity development for financial literacy. ? PEARL and PRRC will support development of agricultural insurance options. ? PEARL's work on value-chain development (e.g., standards) will likely facilitate later-stage adoption of diversification options in PRRC sites (e.g., enabling price premia for CamGAP vegetables, agroforestry).

CCA Dimension[1]	Sub-Category by Agroecological Dimension	Projects		Complementarity/ Core Linkage
		PEARL (GCF)	Promoting Climate-resilient Livelihoods ... Tonle Sap Region (LDCF)	
3. Socio-economics	Productivity/ Income	? Scale-up contract farming opportunities between ACs/FAs & buyers (e.g., AMRU Rice, SoA, SeasonFresh & Timfood) that support climate-resilient, sustainable, & high-value production.	<p>? Reduced losses due to climate change, especially for rice (e.g., climate-hardy seed varieties).</p> <p>? Improved yields from better seed quality via support for production, distribution, and use of registered/ certified seeds.</p> <p>? Increased income from better quality production due to adoption of SRP or GAP, garnering higher farm-gate prices.</p> <p>? Improved income stability from income/ crop diversification (e.g., market gardens, intercropping, etc.).</p> <p>? Improved price negotiation based on AC capacity to confirm rice quality at point of delivery.</p> <p>? Higher prices and lower losses due to improved drying and storage.</p>	<i>Complementarity here will depend on alignment of our understanding of what activities fit in this subcategory vs. others (e.g., contract farming).</i>

CCA Dimension[1]	Sub-Category by Agroecological Dimension	Projects		Complementarity/ Core Linkage
		PEARL (GCF)	Promoting Climate-resilient Livelihoods ... Tonle Sap Region (LDCF)	
	Women's Empowerment	<p>? Expand the networks of organic vegetable farmers, primarily women (including virtual networks via YouTube and Facebook that are commonly used by farmers) to support diversification, particularly for female-headed households mainly due to labour migration, and to increase opportunities for farmer-to-farmer learning, training of young farmers and collective investment of revenues from organic vegetable production into community development.</p> <p>? Increase awareness of the effects of climate change on agriculture & livelihoods, particularly among the poor, women, youth & elderly</p>	<p>? Scheduling and location of FFS to facilitate inclusion of women.</p> <p>? Some delivery via women's only groups.</p> <p>? Some activities that specifically accommodate women's household activities (e.g., market gardens, water harvesting, chickens, value-addition).</p> <p>? Gender content in core FFS module.</p> <p>? Many of the project's activities to empower farmers and local communities will empower women (e.g., capacity development for business skills, financial literacy, climate resilience planning).</p>	<p>? Similar content re: gender-sensitive livelihood diversification, climate change awareness</p>

CCA Dimension[1]	Sub-Category by Agroecological Dimension	Projects		Complementarity/ Core Linkage
		PEARL (GCF)	Promoting Climate-resilient Livelihoods ... Tonle Sap Region (LDCF)	
	Employment	<p>? Increase contract farming opportunities and jobs through increased value addition and market-based opportunities, particularly for women and youth who may otherwise migrate to urban areas for jobs.</p> <p>? Prepare skills training programs & materials based on the existing FFS/ToT platforms for farmers, ACs, FAs & SMEs in meeting their target production & processing standards, relating to 2.3 above.</p>	<p>? Provision of training programs to target beneficiaries (ACs/ farmer groups/CPAs/FFS/ToTs) on agriculture productions (rice, vegetable, animal, cash crops, fruit tree, etc.), market, value chains, processing, etc.</p> <p>? Through contract farming, non-contract farming, small-scale organic vegetable, SRP, seed producing, animal raising, etc. provides opportunities for women and youths to gain more income.</p>	
	Food Security	<p>? Promote climate-resilient and sustainable farming and agroecological management technologies and practices, as described above, that increase yields and household income to address food security.</p>	<p>? Increased food security based on adoption of project-supported approaches that increase biophysical absorptive capacities, reduce climate-related losses, reduce post-harvest losses, increase crop diversity, increase income diversity, increase income, and increase income certainty.</p>	

CCA Dimension[1]	Sub-Category by Agroecological Dimension	Projects		Complementarity/ Core Linkage
		PEARL (GCF)	Promoting Climate-resilient Livelihoods ... Tonle Sap Region (LDCF)	
4. Institutions and Governance	IWRM	? Establish inter-AC/FA networks to scale up an IWM approach in upper watershed areas of Stung Sen where the production of organic rice & vegetables is dependent on clean water and healthy surrounding ecosystems.	? Water resource stock-take ? Improved local awareness of linkages between agricultural land uses and water cycle/ resources ? Support packages available with equipment for basic local agrometeorological or hydrological monitoring ? Multi-stakeholder consultations (e.g., PDoWRAMs, PDAFFs, PDoEs, ACs) during implementation re: agro-hydromet awareness, planning, and decision-making.	

CCA Dimension[1]	Sub-Category by Agroecological Dimension	Projects		Complementarity/ Core Linkage
		PEARL (GCF)	Promoting Climate-resilient Livelihoods ... Tonle Sap Region (LDCF)	
	Institutional Capacity Building (Nat & Local)	<p>? Train local authorities to apply a harmonized diagnostic approach that draws on the Analytical Framework of Agroecology/TAPE[3], VRA & HVCA for CDP & CIP preparation, retrofitting, review, monitoring & updating.</p> <p>? Train OAEs & local agricultural suppliers for supporting farmers, ACs, FAs & SMEs in meeting their target production & processing standards.</p> <p>? Strengthen institutional arrangements & operational capacities for enforcement & implementation of relevant PLRs and effective coordination & partnerships across sectors & levels of government.</p> <p>? Support the NCSD & NCDD to enhance coordination & collaboration across sectors & all levels of government.</p>	<p>? National:</p> <ul style="list-style-type: none"> o MAFF: decision-process-based approach to improved CCA-planning and execution, particularly related to access and use of agromet data o Strengthened inter-ministerial coordination in collaboration with CCCA o MAFF: application and utilization of AEZ and VRA for CCA planning (e.g., updated CCA strategy for agricultural sector) <p>? Sub-national:</p> <ul style="list-style-type: none"> o CD for PDAFFs & PDoEs in support of climate-resilient agricultural practices (e.g., conservation agriculture, diversification, resilience planning) o CD for ACs, FAs, & CPA committees re: CCA planning, contract farming, business management o Strengthened capacities (re: CCA and agroecology) of extension services in context of SNA reforms. 	

CCA Dimension[1]	Sub-Category by Agroecological Dimension	Projects		Complementarity/ Core Linkage
		PEARL (GCF)	Promoting Climate-resilient Livelihoods ... Tonle Sap Region (LDCF)	
	Policy and Regulatory Enhancement	<p>? Upgrade existing guidelines, training materials & tools on GI, CamGAP, organic certification, HACCP, ISO 22000 & others as relevant to ensure the principles of climate-resilient & agroecological approaches are fully explored and incorporated.</p> <p>? Identify & propose gap-filling actions to improve the effectiveness of relevant PLRs concerning GI, CamGAP, SPS, market information, seed management, agrochemical control, IPM, traceability, food safety, contract farming, extension services, tenure, agricultural cooperative formation, microfinance & crop insurance (being proposed).</p>	<p>? Proposed policies or other regulatory mechanisms to support performance-assurance in farming contracts.</p> <p>? Explore opportunities for policy-based support for incentives for climate-resilient agricultural practices.</p>	

CCA Dimension[1]	Sub-Category by Agroecological Dimension	Projects		Complementarity/ Core Linkage
		PEARL (GCF)	Promoting Climate-resilient Livelihoods ... Tonle Sap Region (LDCF)	
	Information sharing	<p>? Identify best practices & lessons learned through the above activities in consultation with farmers, ACs, FAs, SMEs, local governments & private partners.</p> <p>? Document & disseminate best practices & lessons through knowledge events (e.g., trade fairs) within NTSB & beyond & through social media channels.</p>	<p>? Promote understanding, communication, and engagement in the stakeholder network for relevant value-chains (esp. for rice, but also cash crop produce)?e.g., farmers, FAs, ACs, millers, seed suppliers, service providers, creditors, etc.</p> <p>? Best practices and lessons learnt identified during the lifespan of the project implementation concerning climate resilience, livelihood diversification, capacity development, value chain, income generation activities, etc.</p> <p>? Disseminate and share lessons learnt via the project website, printed materials, newsletters, social medias, etc.</p>	<p>? Lessons learnt and best practices of both projects can be shared/ exchanged and documented in different platforms concerning the promotion of climate resilience and livelihood diversifications of farmers in the Tonle Sap region.</p>

CCA Dimension[1]	Sub-Category by Agroecological Dimension	Projects		Complementarity/ Core Linkage
		PEARL (GCF)	Promoting Climate-resilient Livelihoods ... Tonle Sap Region (LDCF)	
	Data Management and Access	? Establish a landscape-level agroecology monitoring system (LAMS) with an interactive web-platform to provide a decision support tool for farmers and other value chain actors, public institutions, policymakers, investors, lenders and insurers.	? Exploring integration of TAPE (possibly with SHARP) into MAFF's overall and CCA-related monitoring for decision processes. Project-based approach likely via ICRISAT's MEASURE platform, possibly to extend post-project as SAS arrangement.	? Both projects? agro-ecological monitoring approaches should be aligned to MAFF's decision processes and harmonized as much as possible in content, format, capacity development, hardware, operational delivery, etc. ? There would likely be additional benefit in incorporating the harmonized approach into an integrated spatial planning framework with various mapping layers relevant to MAFF's decision processes.

UNDP: Reducing the Vulnerability of Cambodian Rural Livelihoods through Enhanced Sub-National Climate Change Planning and Execution of Priority Actions (2016-2020): The project is reducing the vulnerability of rural Cambodians, especially land-poor, landless, and women-headed households. This is being achieved through investments in small-scale water management infrastructure, technical assistance to resilient agricultural practices, and capacity-building support for improved food production in home gardens, especially for poor women. These services are being delivered by sub-national administrations, which are strengthening their overall capacities to plan, design, and deliver public services for resilience-building. The project is improving sub-national administrative systems affecting investments in rural livelihoods through climate-sensitive planning, budgeting, and execution.

Given the close alignment of aims and interventions, this LDCF project will incorporate the best practices and lessons learned from the UNDP project, and will build upon the strengthened decentralized administrative and operational capacities.

FAO: Strengthening the adaptive capacity and resilience of rural communities using micro-watershed approaches to climate change and variability to attain sustainable food security in Cambodia (2015-2020): The project is building adaptive capacities of rural communities and reducing their vulnerability to climate change and variability through integrated micro-watershed management and climate-resilient agricultural practices to ensure food security in **Siem Reap**, Preah Vihear, **Kampong Thom**, and Ratanakiri.

This LDCF project will build upon that project by up-scaling best-practices and adapting (as needed) the project's CSA curriculum for farmer field schools.

UNDP: Strengthening Climate Information and Early Warning Systems to Support Climate-Resilient Development in Cambodia (2015-2019): The project strengthened institutional capacity, inter-ministerial coordination, and infrastructure to enhance the inclusion of climate-change considerations in short- and long-term planning, sectoral planning, and other decision-making processes. The project installed agro-meteorological weather stations (AWS) and automatic hydrological stations (AHS) in Preah Vihear, Kampong Thom, Kampong Speu, Kandal, Phnom Penh, Takeo, Kampot, Kep, Preah Sihanouk Ville and Koh Kong.

This LDCF project will build on that UNDP project by leveraging the installed agro-meteorological stations and resulting data, as well as related capacities to improve the utility of the associated forecasts for farmers, agricultural value chain actors, PDAFFs, and MAFF. The LDCF project will also integrate those data into CCA-oriented decision processes within GDA and GDLC.

[1] Higher-level categories of FAO's Adaptation Tracking Indicators (FATI)

[2] In the processing of raw cashew nuts, organizations like the Sambo Cashew Association are providing employment opportunities mainly to young women from cashew farmer households. Many women engage

in organic vegetable production to diversify income sources to address farm labour shortages. These efforts also could be part of market-based systems to incentivize sustainable practices (<http://www.wocan.org/news/women?s-carbon-standard-?-re-named-w-standard>).

[3] FAO has developed a Global Analytical Framework for the Multi-Dimensional Assessment of Agroecology and Tool for Agroecology Performance Evaluation (TAPE)

7. Consistency with National Priorities

Describe the consistency of the project with national strategies and plans or reports and assessments under relevant conventions from below:

NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.

At the national level, the National Strategic Development Plan 2014-2018 (NSDP) outlines development priorities for reducing poverty and fostering economic growth. The proposed project is fully aligned with priority activities for the agricultural sector, which aims to scale-up the application of new technologies and techniques, mechanization, and irrigation to improve yields and diversify into high-value crops and varieties in an environmentally sustainable manner. The NSDP also underscores the increasing impacts from climate change and outlines the need for integration of climate resilience in a number of activities for the agricultural sector, all of which correspond to this project's planned interventions.

This project will contribute to the implementation of Cambodia's Climate Change Strategic Plan 2014-2023 (CCCSP), as it directly corresponds to five out of eight strategic objectives, including: "Promote climate resilience through improving food, water, and energy security," and "Ensure climate resilience of critical ecosystems (including Tonle Sap)". The various strategies to achieve these objectives are closely linked to this project's activities and outputs.

At the sectoral level, MAFF's Climate Change Priorities Action Plan (CCPAP) for the agriculture, forestry, and fisheries sector (2016-2020) identifies the priority actions necessary to deliver the CCCSP strategies and priorities. The goal of MAFF's CCPAP is to contribute to the reduction of climate change impacts and vulnerability of the agricultural sector while increasing adaptation and DRR as well as climate change mitigation. This project contributes directly toward CCPAP's strategies and targeted impacts for agriculture, agricultural producers, and agro-industries. These include increases in agricultural outputs and rice yields, increases in producers' incomes in particularly climate-vulnerable areas, increased employment in agribusiness and agro-industries, increased area planted with resilient cash crops, reduced crop losses from climate hazards, increased number of agribusiness SMEs, increased farmer access to extension services for improved climate resilience, and integration of climate adaptability and DRR into the CDPs, CIPs, and associated action plans for 100 communes and CBOs. This LDCF project is instrumental to operationalizing the CCPAP's relevant strategies.

The proposed project is also in alignment with Cambodia's submissions under the UNFCCC. In its NDC[1], Cambodia highlights the agricultural sector as one of the most vulnerable to the impacts of climate change due to the dependence of most of country's production systems on the hydrological cycle of the Tonle Sap Lake. The NDC outlines a selected number of priority adaptation actions to which this LDCF project will directly and indirectly contribute. This includes measures such as: "Promoting and

improving the adaptive capacity of communities, especially through community based adaptation actions, and restoring natural ecology system to respond to climate change?; ?Developing climate-proof agriculture systems for adapting to changes in water variability to enhance crop yields?; ?Developing crop varieties suitable to Agro-Ecological Zones (AEZ) and resilient to climate change?; and ?Strengthening technical and institutional capacity to conduct climate change impact assessments, climate change projections and mainstreaming of climate change into sector and sub-sector development plans?. The NDC will be delivered through the implementation of the CCCSP, including through its sectoral implementation vehicles, the SCCAPs.

Cambodia has also initiated a process to implement its National Adaptation Plan (NAP) to integrate climate change adaptation further into sectoral policies and budget-planning in order to meet medium- to long-term adaptation needs. The NAP process builds its thematic objectives and priorities on the CCCSP and the SCCAPs, with which the project is aligned as described above.

Cambodia submitted its Second National Communication (NC2) to the UNFCCC in 2015, providing an assessment of vulnerabilities and climate change impacts across four sectors including agriculture. NC2 validated the large-scale impacts climate change will have in Cambodia, including losses in agricultural yields and increased water deficits, underscoring the relevance of the proposed LDCF project.

The proposed project is aligned with one of the two prioritized sectors identified through Cambodia's Technology Needs Assessment (TNA) for adaptation technologies. Water technologies for agriculture represent a key priority for adaptation and this project will help to address the barriers for transfer and diffusion of water-saving technologies in the agricultural sector, particularly for rice.

Finally, the proposed project is also aligned both thematically and geographically with a number of priorities outlined in Cambodia's National Adaptation Programme of Action (NAPA) from 2006. In particular, the project will contribute to the implementation of priorities aimed at strengthening community preparedness in water-storage capacity and management, increasing agricultural productivity, and improving farmers' incomes, food security, and livelihoods in areas affected by flood and drought.

[1] Royal Cambodian Government, ?Cambodia's Intended Nationally Determined Contribution?, 2015.

8. Knowledge Management

Elaborate the "Knowledge Management Approach" for the project, including a budget, key deliverables and a timeline, and explain how it will contribute to the project's overall impact.

Knowledge management approach

This project's knowledge management approach is decision-process-oriented. That is, the goal of knowledge management in the context of this project is to improve the quality of decision-making that results from information gathered and generated by this project.

Therefore, this project's knowledge management approach is the coordinating framework for stakeholder engagements (understanding stakeholders' priorities, critical decisions, and associated informational gaps), M&E plan (including indicators and results framework), communication plan, and sharing of best practices. The knowledge management approach aims to improve decision-making for all stakeholders both during and after the project. Therefore, the project's knowledge management approach bridges between project-oriented metrics and strategic governmental systems for CCA monitoring. These linkages are also supported via the project's coordination with on-going CBIT efforts to enhance CCA-related metrics and tracking.

The project's knowledge management approach is operationalized via several outputs. Component 4 of the project contains most of the project's knowledge management activities.

Knowledge management plan

As part of the knowledge management approach, the project will coordinate closely with other initiatives to strengthen stakeholders' access to updated information, knowledge-sharing, and learning opportunities. In particular, the project will capture and build on lessons learned from other initiatives while also contributing to knowledge-sharing with wider stakeholder groups. For instance, at the national level, the project will benefit from information and knowledge-sharing through the CCCA platform, while at the community-level, best practices and innovations (including for rice-sector commercialization) from ADB and IFAD-funded initiatives will inform the project's implementation. Detailed activities include the following:

- ? Methodologies for conducting a stock-take of water availability and use, and providing recommendations for improvement of government irrigation policies (Component 1) will be shared with DOWRAM offices in other provinces for equivalent future activities.
- ? The methodologies and findings of climate vulnerability assessments in targeted provinces (Component 1) will be widely disseminated across ministries (particularly MOE and its district offices) to inform similar future activities in other provinces.
- ? As mentioned in the description of Component 1, GIZ is establishing a pilot GIS workplace with the provincial administration of Banteay Meanchey, which can serve as a model for the integration of economic, climatic, and agricultural datasets.
- ? Lessons learned from on-farm diversification, promoting climate-resilient rice seeds, and promoting climate-resilient and innovative on-farm practices (Component 2) will be disseminated to and discussed with ongoing projects and programs (e.g., PEARL, CAVAC, ASPIRE) to inform their work.
- ? The project's activities to improve farmers' access to credit (Component 3) will both be informed by and provide lessons for ongoing research by CGIAR and FAO.

? The project will also collect and disseminate valuable data to assist with bottom-up development of governmental policies, including (i) interactions between rice growers and buyers as part of Component 3 and (ii) experiences from developing crop-insurance approaches.

? Rice yield data produced by the RIICE project will be used to monitor the impacts of climate resilience practices promoted under Component 2.

Additionally, it is expected that the project will contribute to and benefit from knowledge dissemination through the SRP. The SRP plays an important role in integrating research with private-sector opportunities, and the technical knowledge, innovations, and best management practices emerging from this project and others in the SRP partnership will be highly valuable. For example, the project's experience in supporting adoption of the SRP Standard will be documented and used to inform future PGS and SRP activities in Cambodia and the region, including:

? collection of data on farmers' experiences and compliance with the SRP Standard to inform the development of Cambodia's national SRP chapter, and

? collection of data on SRP indicators to enable policy-makers to identify the impacts of SRP certification.

FAO will work closely with the executing agencies and relevant partners to prepare necessary documentation, publications, and other materials capturing the project's achievements, best practices, and lessons learned.

Lessons learned

Table 10: Lessons Learned from Similar Initiatives/ Projects

Reference	Relevant Lessons Learned	Implications for This Project
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Reference	Relevant Lessons Learned	Implications for This Project
<p>Commercialization of Cambodian Rice Project (SCCRP)</p> <p>2017: Case Study # 5: The paddy trading platform[1].</p> <p><i>AFD-funded project</i></p>	<p><u>Background</u></p> <p>The Paddy Trading Platform (PTP) provides information for joint learning.</p> <p>94 FOs[2] have registered in the system as users and have actually posted announcements on their forecast harvests and capacities to supply paddy</p> <p>More than 40 Millers/Exporters were registered in the system and could in principle access all the FO announcement on the on-line platform.</p> <p><u>Recommendations</u></p> <p>Integrate the PTP into MAFF's website platform (called PLAS-Gate) in order to complement MAFF agriculture market information systems. The Agriculture Market Office (AMO) of the Department of Planning and Statistics is in charge of the PLAS-Gate.</p> <p>The national Platform of Farmer Organisation (FO) Federations do not have base legitimacy to manage the PTP, so they require external facilitation to enhance understanding and trust and they do not represent rice-millers, but the PTP could be seen as an instrument to gain bargaining power and strengthen FO role in the rice supply chain.</p>	<p>Under GDA activities in Component 1, GDA will consider integrating the PTP into MRV systems for CCA planning or as a mechanism to improve informational efficiencies in rice value chains.</p> <p>LDCF project framework links with the Technical Working Group on Agriculture and Water (TWG-A&W), in dialogue with the government (MAFF and MORAM as the TWG co-chairs). Project (Component 1) closely liaises with TWG-A&W and TWG-Climate Change's work in relation to improved market information system, improved information dissemination, etc. The TWG-A&W and TWG-Climate Change is the window for LDCF to closely coordinate for strategy development and policy dialogues.</p>

Reference	Relevant Lessons Learned	Implications for This Project
<p>Strategic Program for Climate Resilience (SPCR) for Cambodia[3]</p> <p><i>ADB-funded project.</i></p>	<p>3 out of 5 climate change mainstreaming guidelines were produced in 2019 under SPCR and that may be useful for LDCF. They are:</p> <ul style="list-style-type: none"> - Guidelines for Crop Diversification in Support of Climate Smart Agriculture (MAFF); - Guidelines for Mainstreaming Climate Change into Development Planning of Small water storage (MRD); - Guidelines for Climate Change Adaptation in Protected Areas (MoE). 	<p>The guidelines for diversification, small water storage, and climate change adaptation (for both protected and non-protected areas) fit well with the targeted contexts of this LDCF project, and will be incorporated in order to increase resilience in rice-based communities. Specifically, the PMU will advise:</p> <ul style="list-style-type: none"> - Alignment of Components 1 and 4 to SPCR guidelines where possible in the contexts of increased policy dialogues with government (MAFF); - Alignment of the technical delivery of Components 2 and 3 with SPCR's suggestions and guidelines, such as with respect to CPAs' water storage system/ water-harvesting, activities related to solving water-shortage issues, etc. <p>The PMU will closely collaborate with MoE's NCSD and the Technical Working Group on Climate Change, where MoE and its development partners discuss climate-change-related policies and strategies.</p>

Reference	Relevant Lessons Learned	Implications for This Project
<p>Adaptation Technology Guide: Agriculture, March 2019[4]</p> <p><i>ADB funded project.</i></p>	<p>The guide[5] provides information on 34 technologies and options for adapting climate change in the agricultural sector. The technologies cover:</p> <ul style="list-style-type: none"> - Planning for climate change and variability - Sustainable water use and management - Integrated soil management - Sustainable crop management - Sustainable farming and livelihood systems - Capacity building and stakeholder organizations 	<p>The PMU will ensure that the technical delivery of Components 2 and 3 will take into account the relevant technologies and suggestions for increasing climate resilience for rice farming, GAP vegetable practices, integrated water resource management, etc.</p> <p>TWG-A&W and TWG-Climate Change are the platforms to discuss these guides.</p>
<p>June 2019: Cambodia Climate Change DSS Toolbox manual[6]</p> <p><i>ADB funded project.</i></p>	<p>The Climate Change Decision Support System Toolbox is a GIS-based tool developed by MoE's GIS services and Climate Change Department that provides detailed information on climate change projections in Cambodia at the provincial, district, and local levels.</p> <p>The projection is to 2050 for precipitation and temperature (both rainy and dry seasons).</p> <p>The toolbox[7] platform is capable of connecting with other relevant websites and governmental data sources such as meteorological, hydrological, environmental, soil, and land-cover data. The tool displays down-scaled climate data and provides a comprehensive set of provincial threat profiles.</p>	<p>GDA and GDLC, in consultation with TAG, will consider integrating the the CC DSS into broader CC decision-support and MRV approaches under Components 1 and 4. CC DSS data may also be incorporated into delivery of Components 2 and 3 to inform provincial and local CCA planning.</p>

Communication strategy

The project's communication strategy will ensure that all relevant stakeholders benefit from information gathered and generated by the project.

An important consideration in this regard is that **the PMU will ensure that all project materials are generated in formats that target the widest possible range of stakeholders**, including (as relevant) illiterate stakeholders, speakers of indigenous languages and dialects, etc. This also means that all communications will avoid unnecessary jargon or unfamiliar terminology. That is, **all communications will be designed, produced, and disseminated from the users' points of view, with a clear sense of the intended uses and outcomes of the communications.**

At the national level, the PMU will produce the full communication activities and set up the appropriate communication tools. These include the project's website, newsletters, factsheets, policy briefs, social media strategy, case studies, technical reports etc. The PMU will share these communications via various relevant knowledge platforms (domestically and internationally).

At the regional (inter-provincial) level, regular meetings and workshops among the provinces will be held to document and share lessons learned, challenges, and best practices. This will bring key representatives?e.g., farmers, farmer groups (ACs, CPAs, etc.), PDAFFs, PDoE, PDoWRM, PDoWA, etc.?to meet and discuss.

At provincial and local levels, the project will use community-led and gender-differentiated dissemination systems for sharing information and facilitating the learning cycle.

In order to share information publicly about the project's implementation and best practices, the PMU will support integration within existing governmental websites (e.g., MAFF-GDA and MoE-GDLC) to ensure sustainability and ownership.

Under Component 4, planned activities at national, regional, provincial, and community levels include:

National level:

- Document and disseminate lessons learned and best practices through different fora and audience-appropriate media (e.g., video, posters, pamphlets/ leaflets/ flyers, case studies, study tours, community exchange visits, social media).
- Organize a final dissemination workshop at the national level to share results, lessons learned, and best practices from the project's implementation with relevant stakeholders.

Regional level:

- Organize annual multi-stakeholder regional workshops for reporting and feedback among decentralized stakeholders.
- Organize events with model farmers to share their experiences (e.g., re: integrated cropping, transitioning to SRP, adoption of improved rice varieties, use of certified seeds, contract farming) and present awards and recognitions.

Provincial level:

- Organize annual multi-stakeholder provincial workshop(s) for sharing the experiences with relevant stakeholders (field practitioners, model farmers, agricultural cooperatives, CPA members, key experts, etc.) to share information and experiences.

Community level:

- Facilitate farmer-to-farmer exchanges that address specific practical challenges and experiences in order to reduce barriers to adoption and continuance of supported practices, and to boost wider field replications. Anticipated opportunities for exchanges include:
 - o Demo plots for improved rice varieties (e.g., climate-tolerant, high-value)
 - o Demo plots for climate-adaptive diversification and agro-ecological practices, including SRP-compliant production
 - o SRP-certifiable production, including associated record-keeping and AC coordination;
 - o Home gardens/ Organic vegetable growing, including community-based vegetable (GAP) systems;
 - o Water-smart and water-harvesting systems, including local water resource management (e.g., managing water retention, community ponds, rainwater collection, water pipe system, etc.)
 - o Participatory Guarantee Systems (PGS) for GAP or SRP and associated market linkages
 - o ACs using climate-resilient technologies
 - o Community-led climate-resilient infrastructural investments (e.g., supported via CRIPs)

The PMU's proposed tools for enhancing the project's visibility include:

- Overall aspects

- (i) Visual identification for project and partners;
 - (ii) Highlighting the project's partners in media interviews, press releases, etc.;
 - (iii) Supporting documents such as photos of logos in the field, photos of activities, copies of press releases, etc. to be included in progress and final reports.
- Field level
 - (i) Signboards, display panels and banners;
 - (ii) Publications and materials such as training manuals and posters;
 - (iii) Supplies and equipment.
- Printed publications
 - (i) Brochures, leaflets, flyers, newsletters and other publications of the project's activities and results.
- Project website
 - (i) Project information (objectives, activities, expected results, etc.);
 - (ii) Partnerships and links;
 - (iii) Donor funding logos.
- Project Facebook Page
 - (i) project identity, funder logos, and photos/ short videos of project achievements.
- YouTube
 - (i) short video clips documenting field experiences, stakeholder engagement (with consent), best practices, relevant interviews with stakeholders and experts, etc.
- Audiovisuals
 - (i) Films for distribution by the media (mainly for television, campaigns, and Internet);
 - (ii) Operational films (films to provide technical information and practices to local population, project partners, and authorities).
- Public events ? Many types of events are possible and attracting media interest will always be a key consideration in making the events cost-effective. Press release will be an integral part of the events.

Channels of communication

Given the diversity of audiences that need to be informed and engaged, the PMU will select communication channels based on types of media that can be appropriately used by priority audiences:

Communication tools	Target Audiences
Policy briefs	Mainly policy makers and associated stakeholders (e.g., government, development partners, NGOs, scientists, etc.)
Websites	All types of audiences (inside and outside Cambodia)
Workshops, stakeholder forums, consultations, etc.	Mainly farmers, farmer groups, MoE/PDoE, MAFF/PDAFFs, MoWRM/PDoWRMs, MoWA/PDoWAs, NGOs, etc.
Audio-visuals (television, films, etc.)	All types of audiences (inside and outside Cambodia)
Social media (Facebook and YouTube)	All types of audiences (inside and outside Cambodia)
Visualization materials	Mainly line ministries/ agencies, NGOs, and development partners.
Signboards, display panels, and banners	Mainly farmers, farmer groups (ACs, CPAs, and other groups)
Printed publications such as training manuals, leaflets, posters, brochures, etc.	Mainly provincial line departments, NGOs, and farmers
Printed publications such as newsletters, project reports, flyers etc.	All types of audiences (inside and outside Cambodia)

[1] The electronic application of the platform is available via: <http://paddycambodia.org> (Login and password are required to access the site.) The Paddy Trading Platform (PTP) was established in 2016 under the Support of SCCRP in order to create and strengthen linkages between Farmer Organizations (FO) and private sector buyers (millers/ exporters) of paddy rice in Cambodia.

[2] Agriculture Cooperative (AC) or Farmer Water User Committee (FWUC).

[3] Package A from April 2015 to April 2019

[4] <https://ncsd.moe.gov.kh/resources/document/adaptation-technologies-guide-agriculturejune-2019en>

[5] Prepared under the TA 8179-CAM Mainstreaming Climate Resilience into Development Planning (MCRDP).

[6] <http://dss.icem.com.au/CambodiaDSS/>

[7] Under ADB's Strategic Program for Climate Resilience (SPCR) for Cambodia 2015-2019

9. Monitoring and Evaluation

Describe the budgeted M and E plan

Cross-referencing

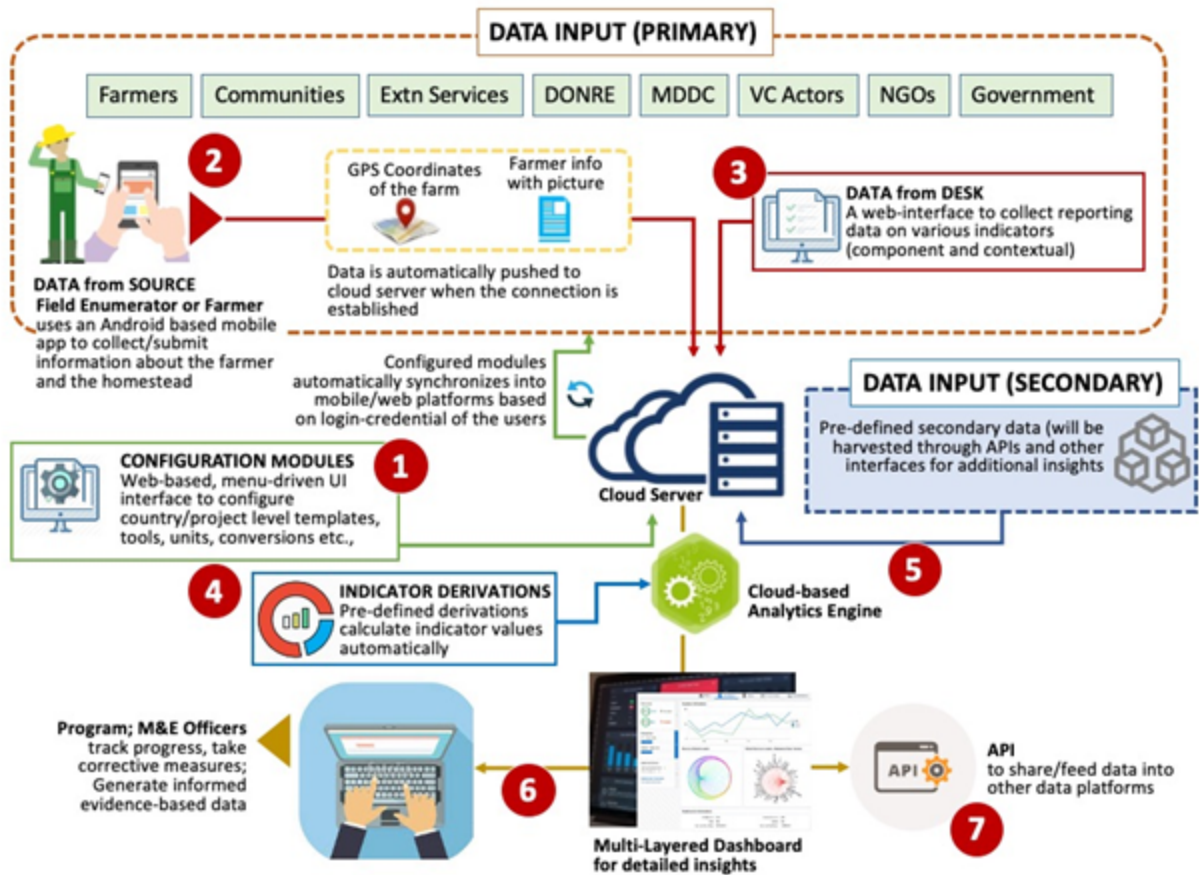
The project's Results Framework (Annex A1) describes the project's indicators, methods of assessment, and associated responsibilities. The project's budget (Annex A2) presents the project's budgeted activities, provisional workplan, and outcome-level indicators.

M&E Plan

Executing the RBM framework will require quality monitoring data and analyses in real-time. Therefore, the project will adapt, customize, and implement the digital M&E system that has been developed by ICRIAT[1] for agricultural research for development projects (see Outputs 4.1.1. and 4.1.3.). The mobile- and web-based platform enables collection of quality geo-referenced data with real-time tracking and actionable insights for course-correction and implementation. The customized platform will: (i) use pre-defined templates to collect geo-referenced data from ACs, communities, producers, farms, value-chain actors, FFSs, and capacity-building activities in real-time, directly from the data sources; (ii) collect and aggregate data for periodic reports, updates, and information from implementing partners and other stakeholders; (iii) harvest M&E related information from different secondary sources; (iv) track the project's indicators and implementation progress; (v) provide spatial distribution of the project's intervention sites and adoption; and (vi) provide a web-based, multi-layered dashboard to visualize the reported data both spatially and temporally.

The platform customized at the project level will be deployed on a cloud server and will be configured by the country project team to define the templates, user roles, access, and dashboards. The reporting templates will be designed and digitized into the platform following extensive consultation with the project teams. The reported data will be visualized in an insightful and interactive dashboard along with suitable derivations for the indicators in the different frameworks.

Figure 21: Project's Configurable Architecture for the M&E/ RBM Platform



In addition, opportunities will be explored during project implementation for linkages between this system, which is specifically focused on supporting the RBM system of the project itself, and the needs for monitoring and traceability. Moreover, Output 4.1.3. ensures that the project's M&E and KMS is integrated into national results-tracking for agricultural CCA. Such linkages may take the form of flows of information on methodological approaches and tools for digital information management, as well as the direct flow of data (e.g., related to adoption of standards-based production).

During the project's inception phase, baselines for the results framework will be reviewed in the Inception Workshop and validated by the PSC, to be augmented and updated as necessary.

During the project's delivery, execution partners will maintain operational records in accordance with the Results Framework (e.g., records of training delivery indicating gender-disaggregated attendance, types of climate-resilient infrastructure purchased via CRIPs). Budgets for this record-keeping are integrated into the budgeting for the respective activities.

It is expected that many of the project's benefits will accrue late in the project, particularly for household adoption of practices and resulting benefits. Therefore, quantifiable progress toward many of the project's targets will likely not begin appreciably accruing until the project's 3rd or 4th year. This is especially true given that many of the project's benefits lag adoption by months or years (e.g., switching agricultural

production practices). Many activities in the first half of the project--particularly at local levels--will focus on establishing the foundation for achievement of targets that require substantial enabling activities (e.g., technical assistance, institutional support, policy signaling, etc.).

Activity	Timing	GEF Budget ^[1]	Responsibility
KMS to inform M&E (e.g., ICRISAT's MEASURE) ^[2]	Semi-annual reporting ^[3]	28450	ICRISAT; data-provision via GDA & GDLC
Baseline survey	Year 1	50,000	GDA
Endline survey	Year 5	50,000	GDA
Mid-term evaluation	Approximately Month 31	50,000	FAO
Final/ Terminal evaluation	Approximately Month 55	82,000	FAO
Final report	Approximately Month 60	6550	FAO
<i>Total</i>		<i>267,000</i>	

For stakeholder engagement plans, see Annex I2.

Disclosure

The project will ensure transparency in the preparation, conduct, reporting, and evaluation of its activities. This includes full disclosure of all non-confidential information and consultation with major groups and representatives of local communities. The disclosure of information shall be ensured through posting on websites and dissemination of findings through knowledge products and events. Project reports will be broadly and freely shared, and findings and lessons learned made available.

For more information, see Annex I2.

^[1] The International Crops Research Center for the Semi-Arid Tropics, a CGIAR center.

[2] USD

[3] This is the portion of ICRISAT's anticipated LOA that will cover project-based M&E deliverables.

[4] The expenditures are expected to be in years 1 and 2, but the reporting is expected semi-annually.

10. Benefits

Describe the socioeconomic benefits to be delivered by the project at the national and local levels, as appropriate. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF)?

Adaptation Benefits

For descriptions of the project's various benefits to national and sub-national stakeholders, also see Section 1.a.5. *Adaptation benefits*.

This project will improve the climate resilience of the targeted beneficiaries (total: 170,200) and areas (total: 67,309 ha) in several ways.

First, the project will reduce vulnerability and increase resilience through innovation and technology transfer for climate change adaptation, particularly among rice-growing communities of the Tonle Sap region. Technologies and innovative solutions will be piloted and deployed to reduce climate-related risks and enhance resilience. These initiatives will make physical and natural assets more resilient to climate variability and change, benefitting 34,040 people (40% women) and resulting in the improved climate resilience and sustainable management of 67,309 ha of agricultural land. Additionally, 34,040 people (40% women) from vulnerable populations will have improved livelihoods and diversified sources of income, particularly related to agriculture and improved access to markets. Further, 102,120 people (50% women) will benefit from new and improved climate information systems pertaining to agro-meteorological threats.

Second, the project will mainstream climate change adaptation and resilience for systemic impact, particularly for rice-growing communities in the Tonle Sap region. Cross-sectoral mechanisms will be strengthened to mainstream climate adaptation and resilience by (i) incorporating adaptation considerations into cross-sectoral policies and plans (at least 1 national and 1 sub-national) related to agriculture and water resource management, (ii) expanding cross-sectoral institutional partnerships (e.g., via the CCCA and integration of MOWRAM and MoWA), (iii) an updated and strengthened framework for climate-related decision processes, and (iv) climate risk and vulnerability assessments conducted in five provinces. Finally, institutional and human capacities will be strengthened to identify and implement adaptation measures via the training of 68,080 people (30% women).

Decent Rural Employment

Decent work provides opportunities for work that is productive and delivers a fair income, security in the workplace and social protection for families, better prospects for personal development and social integration, freedom for people to express their concerns, organize and participate in the decisions that affect their lives and equality of opportunity and treatment for all women and men.[1] In rural contexts, decent employment is intimately linked to agricultural livelihoods.

To ensure that FAO-supported initiatives contribute to decent rural employment, FAO has identified prioritized groups and four pillars for decent rural employment.[2] The following table presents an overview of the ways in which this LDCF-supported project contributes to decent rural employment within FAO's established framework.

As noted in the table below, the project promotes decent work in several ways, many of which are also reflected in the SRP Standard (see *Table 6* in Section 1.a.2 with respect to Output 2.1.3.). As such, the project's support for increased adoption of the SRP Standard plays a significant role in advancing decent rural employment nationally, and especially in the Tonle Sap plain. In addition to SRP's indicators for improved economic returns of labor (e.g., net income, labor productivity, yields, resource/ input efficiencies), the standard also includes several indicators pertaining to worker health and safety, child labor and youth engagement, and women's empowerment. The inclusion of these indicators in a common standard helps facilitate broad-scale adoption and transparency in tracking progress.

Project's Facilitation of Decent Rural Employment
Relevant Prioritized Groups
<ul style="list-style-type: none"> - Small-scale producers, including contributing family workers - Agricultural workers in paid employment - Workers engaged in paid employment in secondary/ tertiary activities directly linked to food production and agriculture, particularly in the informal economy - Women and youth within the previous categories - Specific vulnerable groups (e.g., landless people, migrant workers, disabled people, elderly people, single-adult households, and indigenous people)

Pillar 1: Employment-creation and enterprise-development

- DRE addressed explicitly in agriculture and rural development policies, strategies and programs
- Women and men small-scale producers supported in accessing markets and modern value chains
- Agribusiness and marketing micro, small, and medium enterprises supported in accessing markets, training, financial services, and other productive assets
- Vocational and educational training programs on technical and business skills for rural people supported
- Employment-centered livelihoods diversification mechanisms supported
- Capacities of national partners supported to collect and analyze age and sex disaggregated data on rural labor markets
- Impact of technology options on the number and quality of jobs created taken into account

Pillar 2: Social protection

- Mechanisms to extend social protection to small producers and informal workers supported, involving producer organizations and communities/ households [e.g., project's support for development of crop insurance]
- Public employment programs supported in rural areas, which adopt comprehensive approaches to build self-reliance beyond basic survival needs [e.g., project's funding of concessionally cofinanced local labor via CRIPs]
- Occupational safety and health measures for the rural workforce adopted by promoting safer technology for small-scale and commercial agriculture in extension programs [e.g., SRP Standard]
- Labor-saving technologies developed for rural poor households and to reduce women's domestic and care tasks [e.g., investments in post-harvest technologies for ACs]
- Working conditions improved in rural areas, including living wages in agriculture [e.g., improved income, SRP Standard]

Pillar 3: Standards and rights at work

- Socially responsible agricultural production supported, specifically to reduce gender and age-based discrimination [e.g., project's explicit support of gender-sensitive options for livelihood diversification and climate-adaptive production practices]
- Standards established with support and incentivizes to reduce child labor [e.g., SRP Standard]
- Compliance with national labor legislation promoted in the rural areas

Pillar 4: Governance and social dialogue

- Countries supported in strengthening democratic organizations and networks of producers and workers, particularly in the informal rural food economy
- Representation of the rural poor in social dialogue and policy dialogue through their organizations supported
- Participation of rural poor in local decision-making and governance mechanisms supported
- Rural women and youth groups empowered to be involved in these processes from the initial steps
- Synergies built between organizations, programs, and countries, and producer-to-producer learning opportunities created

[1] <https://www.ilo.org/global/topics/decent-work/lang--en/index.htm>

[2] FAO, 2010. *Rural Employment, Guidance Material #1: Guidance on How to Address Decent Rural Employment in FAO Country Activities (2nd ed.)*. <http://www.fao.org/3/i1937e/i1937e.pdf>

11. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification *

PIF	CEO Endorsement/Approval	MTR	TE
Medium/Moderate			

Measures to address identified risks and impacts

Elaborate on the types and risk classifications/ratings of any identified environmental and social risks and impacts (considering the GEF ESS Minimum Standards) and any measures undertaken as well as planned management measures to address these risks during implementation.

Risks from the Project ? ESM Plan in the table below.

For further details, please refer to the Environmental and Social Risk Management Plan and Annex II (Project Risk Certification) attached as supporting documents.

Risk Identified at PIF Stage	Risk Classification	Mitigation Actions
1.5 ? Risks associated with improvements to irrigation schemes	Moderate	N/A ? During the PPG phase, it was determined that the project would more effectively contribute to CCA via support to other forms of water management. At the local level, the project will engage with some farmers who have access to irrigation and will engage with some farmer water user groups (FWUGs) as local institutional counterparts (e.g., for improved seed production and local institutional support for agro-ecological practices), but not with the aim of improving irrigation schemes <i>per se</i> .

<p>3.2.1 ? Risks associated with the importation or transfer of seeds and/or planting materials for cultivation</p>	<p>Moderate</p>	<p>The project will support the multiplication of certified seeds from domestic breeders for foundational and registered seeds (particularly CARDI and GDA). The project will also support the increased use of certified seeds. Therefore, much of the project?s seed-related activities are associated with strengthening the domestic supply of quality seeds.</p> <p>The project will use local seed-supply systems, particularly those administered by CARDI and GDA. In all cases of seed procurement, appropriate technical clearances will be sought.</p> <p>The importation of seeds is not foreseen as part of this project. However, any imported varieties used by the project will be based upon recommendations from the technical team implementing the project to enhance farmer resilience. Should this situation arise, appropriate technical clearances will be sought.</p> <p>Governmental operational partners?particularly GDA, given its role in oversight of seed-quality certifications?will undertake procurement of seeds and planting materials/ equipment in line with relevant laws and regulations, including compliance with national commitments under the Convention on Biological Diversity (CBD), the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture (PGFRA), International Plant Protection (IPP) Convention, and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGFRA).</p>
<p>3.2.2 ? Risks associated with the importation or transfer of seeds and/or planting materials for research and development</p>	<p>Moderate</p>	<p>N/A ? The project does not envisage importation or transfer of seeds or planting materials for research and development. The project will make use of seeds (particularly stress-tolerant and climate-adaptive varieties) developed and supported by CARDI, as well as high-market-value varieties for which foundation and registered seeds are produced via official, governmentally sanctioned protocols and supply chains. (Refer to prior row.)</p>

<p>5.1 ? Risks associated with the procurement, supply, and/ or use of pesticides on crops, livestock, aquaculture, or forestry</p>	<p>Moderate</p>	<p>The project does not call for the procurement or supply of pesticides. It also does not call for the use of pesticides, though it will offer farmer field school modules on integrated pest management (IPM). Additionally, communities may choose to pursue standards-based production that entails guidance, limitations, or prohibitions on the use of various chemical inputs, including pesticides. Therefore, the project?s activities associated with this issue pertain entirely to capacity development for responsible use, favoring agro-ecological and nature-based solutions when practicable.</p> <p>In that context, it is unlikely but possible that pesticides could be procured as part of FFS curricula or small-scale demonstrations regarding IPM or crop management.</p> <p>If the project at some point considers the procurement of or provision pesticides, clearance procedures will be followed according to the guidance provided under ESS5 in FAO?s ESM Guidelines and, as advised via the PSC, FAO?s Plant Production and Protection Division will be consulted.</p>
<p>5.2 ? Risks associated with the provision of seeds or other materials treated with pesticides (in the field and/ or in storage)</p>	<p>Moderate</p>	<p>As above, the project?s current formulation does not call for or foresee the provision of seeds or other materials that have been treated with pesticides. In fact, the project favors agro-ecological and nature-based solutions that reduce reliance on synthetic chemical inputs.</p> <p>If the project at some point considers the provision of seeds treated with pesticides (e.g., potentially as a small-scale FFS comparison plot), clearance procedures will be followed according to the guidance provided under ESS5 in FAO?s ESM Guidelines and, as advised via the PSC, FAO?s Plant Production and Protection Division will be consulted.</p>

<p>7.5 ? Risks associated with operation in areas or value chains with presence of labor migrants or that could potentially attract labor migrants</p>	<p>Moderate</p>	<p>The project's participatory approach is the primary mechanism for ensuring sensitivity and responsiveness to the project's effects on vulnerable groups. Migratory laborers are important stakeholders in the agricultural value chains in the Tonle Sap Region. As such, they and their interests will be relevant as part of the project's multi-stakeholder value-chain networks. Strengthening these networks</p> <p>Laborers are also likely to benefit from the project's efforts to improve governance of value-chain interactions, such as through (i) greater clarity and formalization of contract farming, which provides structure that allows more predictability in labor arrangements, and (ii) strengthened mechanisms for redress of contract breaches.</p> <p>The PSC's TORs also call for the inclusion of CSOs in order to help ensure additional insights regarding the project's effects on potentially vulnerable groups, including migrant laborers.</p> <p>The project will support various forms of standards-based production, and many related standards include labor standards. (E.g., see SRP Standard 2.1, above.)</p> <p>Please refer to Section II.10 of this document for the project's support of decent rural employment.</p> <p>Finally, the project aims to improve stakeholders' climate-change adaptability. As noted in the prodoc's background assessment of climate-change vulnerabilities, a recent analysis[1] found that Cambodia's crop sub-sector is the economic sector expected to result in the greatest loss of GDP due to climate change, and that the largest portion of that predicted loss will come from loss of labor productivity. Thus, by strengthening the climate adaptability of Cambodia's agricultural sector (particularly its crop sub-sector), the project also contributes significantly to reducing the climate vulnerabilities of agricultural laborers.</p>
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7.6 ? Risks associated with direct employment of workers	Moderate	FAO's portion of execution will follow UN/FAO employment standards, as indicated via employment contracts and periodic reviews of working conditions and grievances. Operational partners' employment practices will follow governmental standards and policies as assessed in operational partnership assessments and per respective operational partnership agreements.
9.1 ? Risks associated with indigenous peoples living outside the project area where activities will take place	Low	Project target areas in Siem Reap and Kampong Thom are home to indigenous communities that may be integrated as project beneficiaries. The project is not expected to conduct any activities that pose risks or threats to these communities.
9.2 ? Risks associated with indigenous peoples living in the project area where activities will take place	Moderate	<p>Please see Annex J for the Report on the Assessment of Vulnerable Groups and Indigenous Peoples, as well as associated action plans. In brief, the analyses suggest that the project poses no appreciable risks to indigenous communities, though there are opportunities to ensure that the project maximizes benefits to these communities, such as with respect to their socio-economic conditions, their control over or access to natural resources, and their levels of power in decision-making and planning.</p> <p>The project has followed and will continue to follow the requirements of ESS9 regarding indigenous peoples and cultural heritage, including FPIC. Throughout the project-design phase, the design team and operational partners have consulted extensively with local communities (including indigenous communities; both directly and with their various advocates) to understand their priorities, concerns, vulnerabilities, and perspectives. (See Annexes I2 and J.)</p> <p>As with all stakeholders and local communities with whom the project will engage, indigenous people will have empowered and participatory roles in the extent and types of activities conducted in partnership with their communities. The project will also ensure that all materials are available in local languages.</p>

9.4 ? Risks associated with project locations in an area where cultural resources exist	Moderate	The project areas will be in areas near important cultural heritage sites. The project is not expected to pose risks to these sites. In fact, it is expected to yield benefits for nearby protected areas via improved local management of natural/ biophysical resources. Additionally, by improving economic conditions and climate resilience, the project will strengthen local communities? resources for protecting and preserving these sites. The requirements of ESS9 regarding indigenous peoples and cultural heritage will be followed throughout the project.
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[1] UNDP. (2018, May). *Addressing Climate Change Impacts on Economic Growth in Cambodia*. http://www.kh.undp.org/content/cambodia/en/home/library/environment_energy/modelling-of-climate-change-impacts-on-growth.html

Supporting Documents

Upload available ESS supporting documents.

Title	Module	Submitted
KH-GEF7-LDCF-Environmental and Social Risk Management Plan-ESMP-20201209	CEO Endorsement ESS	
Project Risk Certification	CEO Endorsement ESS	

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

Note 1: The following table replicates the results framework integrated into the budget file (Annex A2), where the results framework can be more easily juxtaposed with the activity-based budget, administrative budget, and provisional work plan.

Note 2: The project's M&E will mirror governmental approaches to CCA monitoring, which allow indicators to reflect the multi-dimensionality of benefits. That is, the project will gather M&E information that reflects compounding benefits, such that multiple benefits can be recorded for a single household. However, given that GEF LDCF indicators require attribution to single indicators in order to simplify aggregation and avoid "double-counting", a limited number of project indicators will feed into GEF LDCF indicators, such that, for example, a single household can only be shown to have experienced a single benefit.

Note 3: Many of the project's benefits will be based on extensive preparatory and foundational work in the early part of the project (e.g., studies, policy changes, technical capacity development, development of local interventions, trainings of trainers, delivery of local engagements, expansion of seed production, etc.), such that many measurable benefits will accrue primarily in the latter half of the project. This is especially true for benefits that rely on farmers' sales of agricultural crops (such that benefits lag adoption by at least several months).

Results chain	Indicators[2]	Baseline	Mid-term target	Final target	Means of verification	Responsible for data collection
Objective: Rice based communities in the Tonle Sap region of Cambodia reduce their climate vulnerability and increase their resilience to climate change through an ecosystem-based, market-driven approach.						
Component 1: Improving the enabling environment for climate change adaptation in the rice and related priority sectors through integrated policies and planning.						
Outcome 1.1.: Strengthened national and sub-national climate change adaptation policies, planning frameworks, and	a. Number of MAFF-approved projects that incorporate climate resilience (increase from the baseline)	0	1	2	Publication of policies	GDA

Results chain	Indicators[2]	Baseline	Mid-term target	Final target	Means of verification	Responsible for data collection
governance.	b. *Provincial climate-vulnerability assessments conducted (increase from the baseline)	0	3	5	Publication of assessments	GDA & GDLC
	c. An assessment of the efficiency and utility of informational processes and products for water-related planning and decision-making for agricultural	0	0	1	Publication of report	FAO via MOWRAM
	d. *MAFF policies supporting the uptake of socially and environmentally sound contract farming and the SRP Standard established (increase from the baseline)	0	1	3 and SRP Standard established	Publication of policies and SRP Standard	GDA
	e. *Number of people benefitting from improved access and utility of agro-meteorological forecasts (gender-disaggregated; increase from the baseline)	0	5,000 (f: 50%)	102,120 (f: 50%)	Representative survey of targeted areas	GDA & GDLC (in coordination with MOWRAM)
<i>Output.1.1.1.:</i> National and subnational institutions have improved capacity for comprehensive planning and implementation.						

Results chain	Indicators[2]	Baseline	Mid-term target	Final target	Means of verification	Responsible for data collection
<i>Output 1.1.2.:</i> Cross-ministerial and cross-sectoral coordination in climate change adaptation and agriculture improved, in collaboration with the Cambodia Climate Change Alliance.						
<i>Output 1.1.3.:</i> Vulnerability assessments in the five targeted provinces conducted, incorporating AEZ climate modelling for longer-term adaptation planning.						
<i>Output 1.1.4.:</i> Policy and regulatory alignment, and mainstreaming of climate change adaptation enhanced.						
<i>Output 1.1.5.:</i> Financial and incentive mechanisms through MAFF for climate-resilient agriculture developed.						
Component 2: Supporting resilient production systems in rice-based communities for improved livelihoods						
<u>Outcome 2.1.:</u> Increased resilience and adaptive capacities of production systems and the natural resource base.	a. Number of agricultural households with at least one source of agricultural income other than rice paddy (increase from baseline)	0	500	10,000	Representative survey of targeted areas	GDA & GDLC
	b. Number of people benefitting from diversified livelihoods (gender-disaggregated; increase from baseline)	0	1,700 (f: 40%)	34,040 (f: 40%)	Representative survey of targeted areas	GDA & GDLC
	c. Increase in net income from agricultural activities in participating households (KHR/ year)	0	0	800,000	Representative survey of targeted areas	GDA & GDLC

Results chain	Indicators[2]	Baseline	Mid-term target	Final target	Means of verification	Responsible for data collection
	d. Area (ha) under cultivation with climate-resilient or high-market-value varieties (increase from baseline)	0	400	8,000	Representative survey of targeted areas	GDA & GDLC
	e. Area (ha) under climate-resilient agricultural management practices (increase from baseline)	0	3,365	67,309	Representative survey of targeted areas	GDA & GDLC
	f. *Number of commune-level agriculturally related infrastructures installed or climate-proofed (increase from baseline)	0	10	200	CRIP reporting	GDA & GDLC
	g. Number of households with increased climate resilience (increase from baseline)	0	1,850	37,000	Representative survey of targeted areas	GDA & GDLC
<i>Output 2.1.1.:</i> On-farm diversification for improved resilience against climatic variations demonstrated and scaled out.						
<i>Output 2.1.2.:</i> The supply and uptake of premium market seeds with tolerance to climatic and biotic stresses increased.						
<i>Output 2.1.3.:</i> Increased adoption of climate-resilient on-farm technologies and practices.						
<i>Output 2.1.4.:</i> Credit access for rice farmers improved.						
Component 3: Scaling up adaptation technologies and practices in selected value chains through partnerships, markets, and investments						

Results chain	Indicators[2]	Baseline	Mid-term target	Final target	Means of verification	Responsible for data collection
Outcome 3.1.: Scaling of adaptation innovations, technologies, and new markets, and scaling-up agribusinesses, employment, and empowerment at community level.	a. Number of agricultural cooperatives and farmer organizations trained in leadership, management, business planning, marketing, reporting and accounting (increase from baseline)	0	20	70	Training records	GDA & GDLC
	b. Number of people trained via AC trainings (gender-disaggregated)	0	200 (f: 40%)	1,500 (f: 40%)	Training records	GDA & GDLC
	c. Amount (t) of rice produced under purchase contracts (increase from baseline)	0	375	7,500	Survey of agricultural cooperatives	GDA
	d. Area (ha) of land with or in transition to SRP certifiability (increase from baseline)	0	250	5,000	Survey of agricultural cooperatives	GDA & GDLC
	e. Number of agricultural cooperatives and farmer organizations with climate-adaptive technologies or assets (increase from baseline)	0	5	50	CRIP records	GDA & GDLC

Results chain	Indicators[2]	Baseline	Mid-term target	Final target	Means of verification	Responsible for data collection
	f. Number of credit packages piloted for improved credit access of rice processors	0	0	3	Review reports from pilots	GIZ
<i>Output 3.1.1.:</i> The performance of agricultural cooperatives improved via human capacity building.						
<i>Output 3.1.2.:</i> Contract farming models negotiated between agricultural cooperatives and rice processors demonstrated and up-scaled, incorporating crop insurance.						
<i>Output 3.1.3.:</i> Participatory Guarantee Systems (PGSs) established as an interim step towards SRP group certifications.						
<i>Output 3.1.4.:</i> Post-harvest handling, collection, storage, and drying facilities at the processor level enhanced and climate-proofed.						
<i>Output 3.1.5.:</i> Credit availability for rice processors improved.						
Component 4: Building effective knowledge management, innovations, and monitoring & evaluation systems						
<u>Outcome 4.1.:</u> More effective knowledge management and assessment of adaptation innovations.	a. Project M&E systems in place	--	established; on-going	completed	plan on record with PMU	GDA, GDLC, & FAO
	b. Project communication strategy and plan developed	--	established; on-going	completed	strategy and plan on record with PMU	GDA & GDLC
	c. Project website established with updates published quarterly	--	website established; updates on-going	website transitioning or redirecting for post-project; summary report published	website	GDA
	d. Published report on CCA decision processes in the agricultural sector	--	completed	completed	report	FAO via GIZ

Results chain	Indicators ^[2]	Baseline	Mid-term target	Final target	Means of verification	Responsible for data collection
<i>Output 4.1.1.:</i> Project management mechanisms established.						
<i>Output 4.1.2.:</i> Tools, methods, and approaches for monitoring and tracking project progress adopted.						
<i>Output 4.1.3.:</i> Information and M&E systems enhanced.						
<i>Output 4.1.4.:</i> Inter-regional knowledge-sharing fostered.						
<i>Output 4.1.5.:</i> Innovation and new market opportunities fostered.						

[1] Output-based indicators are not mandatory as long as the targets for each output are well defined.

[2] * denotes LDCF CCA indicator

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

Annex B: Response to Project Reviews

Review Feedback			Agency Response
Reviewer	Comment Location	Comment	

Review Feedback			Agency Response
Reviewer	Comment Location	Comment	
GEF Sec	Additional Recommendation for Approval Stage (p. 21)	1. Please provide information on the specific project sites (with geo-referencing) and on the specific LDCF-supported adaptation activities that will be implemented at each.	Please see table in prodoc Section II.1.b.
	Additional Recommendation for Approval Stage (p. 21)	2. Please provide information on how the LDCF-supported activities are providing additional adaptation benefits in the context of the confirmed co-finance.	Please see table in prodoc Section II.1.a.4.
	Additional Recommendation for Approval Stage (p. 21)	3. Please submit the CEO-endorsement stage indicators (this is a different indicator set than PIF stage).	Please see Annexes A1 (Project Results Framework), F (LDCF Core Indicator Worksheet and Metadata), and G (GEF Project Taxonomy Worksheet).

Review Feedback			Agency Response
Reviewer	Comment Location	Comment	
	Additional Recommendation for Approval Stage (p. 21)	4. Please provide further information on measures that will be put in place to ensure effective coordination across the proposed LDCF project and other relevant initiatives, to maximize synergies, avoid duplication, etc.	<p>The project's design ensures efficient and continuous coordination through several mechanisms.</p> <ol style="list-style-type: none"> 1. Proactive and on-going coordination with relevant stakeholders and related initiatives, beginning in the project's initial formulation, continuing through the PPG phase, and extending for the duration of the project's planned implementation. 2. Involvement of broad execution partners, including GDA (hosting the PMU) and GDLC as operational partners (i.e., government-led execution), such that the project is ideally positioned to collaborate or coordinate with any related initiatives (current or future) pertaining to agriculture or Community Protected Areas. Additionally, the project will be executed via MOWRAM, GIZ, IRRI, and WCS, such that several relevant agencies and organizations are directly engaged for coordination with critical baseline initiatives. 3. Explicit cofinancing arrangements with related projects. 4. Explicit, direct, funded engagement with RGC's leading organizational mechanism for inter-ministerial and inter-sectoral climate-related coordination: the Cambodia Climate Change Alliance (CCCA). 5. Broad organizational membership in the Project's Steering Committee (PSC), ensuring that influential representatives of relevant agencies are intimately engaged in the project's strategic direction and tactical delivery, and ensuring flexibility to adapt to evolving constraints and opportunities. 6. Similarly, broadly inclusive organizational membership in the project's Technical Advisory Group (TAG), ensuring that relevant agencies, technical institutions, non-governmental partners, and other organizations with relevant initiatives are frequently engaged regarding the project's technical approaches and operational delivery.

Review Feedback			Agency Response
Reviewer	Comment Location	Comment	
STAP	Part I: STAP Overall Assessment	The project should include mitigation measures to reduce possible negative environmental impacts from GEF-related activities.	LDCF funds are ineligible for dedicated CCM usage. However, the project's activities will produce numerous CCM co-benefits?e.g., reduced CH4 emissions from SRI and improved residue management, reduced economic carbon intensity from increased production efficiencies (including reduced post-harvest losses), increased SOC from agroecological practices, increased adoption of agroforestry, decreased NOx emissions from improved input management (see SRP Standard), etc.
	Part I: STAP Overall Assessment	[T]he project team could consider examining ways to combine access to credit with extension services or early warning, for example through digital financial services.	This recommendation was explored during the PPG phase. Given the technical scope of the project, existing levels of household debt, practical limits on regulation of the rural financial sector, and other considerations, it was determined that the highest-leverage point of entry for the project would be to improve stakeholders' financial capacities. <u>The project will focus on strengthening the performances of Agricultural Cooperatives and producer groups through capacity development and financial support. The project will set up small grant facilities for Agricultural Cooperatives, producer groups to access the grant to implement climate resilient business development plans, which are approved by the project. Through the business development plans, the Agricultural Cooperatives will improve the provision of services to individual farmer members e.g. provision of agricultural inputs in credits, collective buying of agricultural outputs.</u>
	Part II.1.3.: Theory of Change	No proper theory of change is presented.	Please see the diagram of the Theory of Change at the end of ProDoc Section 1.a.2.

Review Feedback			Agency Response
Reviewer	Comment Location	Comment	
	Part II.1.3.	<p>Is there a recognition of what adaptations may be required during project implementation to respond to changing conditions in pursuit of the targeted outcomes?</p> <p>No such concerns are presented, although they should be considered and proper fallbacks developed. Tying the specified sequence of actions and events together in a theory of change would also enable this kind of contingency planning.</p>	<p>Please see ProDoc Section 5.a.: Risks to the Project. Also, please see the Theory of Change at the end of ProDoc Section 1.a.2.</p> <p>Additionally, please note the TORs and provisional membership for the Project's Steering Committee (PSC). The PSC is the primary mechanism by which the project's design ensures appropriate flexibility to achieve the project's stated impacts. The logframe and Theory of Change help to ensure that the specified activities and budget allocations are viewed as means to ends. The project's results framework and M&E plan also help ensure that focus is maintained on targeted impacts rather than the daily process of delivery.</p>
	Part II.1.6.	GEBs are not defined.	GEBs are N/A for LDCF. However, please see ProDoc Annex F for the LDCF core indicator and metadata worksheet.

Review Feedback			Agency Response
Reviewer	Comment Location	Comment	
	Part II.3.: Gender Equality and Women's Empowerment	The PIF notes that woman [sic] compose 60% of the agricultural workforce but then the project only requires 40% female participation in Component 2 and 3. Could this be increased to 60% to reflect the true gender balance in the agricultural sector?	<p>As indicated in the Gender Action Plan, significant efforts have been made to identify the most efficient and effective means to maximize participation of and accrual of benefits to women in the targeted communities. Even so, most community-level interventions in these agricultural communities face similar challenges in increasing women's participation. For example, there is a strong social norm that male members of households represent households for community-level and externally coordinated activities. Moreover, women traditionally oversee domestic and familial responsibilities that limit their availability for engagement (and their constraints are rarely sufficiently similar to accommodate all as a matter of scheduling).</p> <p>Given those challenges, the project explicitly incorporates measures to increase women's opportunities for participation and representation, development of business models and value-adding opportunities specifically conducive to many women's circumstances, development of gender-sensitive CCA indicators, and ambitious targets for inclusion. The approach is three-fold: (i) reducing and accommodating barriers to women's participation, including approaches designed specifically to target women (e.g., approaches that reduce or minimize interference with other workloads to limit time constraints), (ii) strengthening incentives for women's participation (i.e., ensuring appreciable benefits), and (iii) setting ambitious targets for women's participation and gender-disaggregated impacts.</p> <p>Based on recent experiences and feedback from PPG consultations (including women's-only consultations, community discussions, and partner dialogues), the project's gender-disaggregated targets are ambitious and would represent significant progress toward gender parity.</p>

Review Feedback			Agency Response
Reviewer	Comment Location	Comment	
	Part II.8.: Knowledge management	[KM actions/ ideas] should be organized into a purposefully designed KM system to foster its proper implementation.	KM activities under Component 4 have been expanded. The project will support development of a KMS that integrates with the broader national CCA M&E (to which the project also explicitly contributes under Component 1) and enables ICT-based monitoring and tracking (see preliminary work with ICRISAT in adaptation of the MEASURE tool for integration with TAPE and potentially with SHARP, including recent piloting).
Country Comments	Canada	The project should consider the implications of land rights issues on program design	The land rights issues are part of the Environmental and Social Risk Management Plan. Under this project, it is assessed as low risk because the project will not result in any changes to existing tenure rights (formal and informal) of individuals, communities or others to land. In addition, the project targets rice-based communities where land tenure is of less concern compared to upland areas. As part of the project implementation plan, the project will promote and mainstream Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (VGGT) .

Review Feedback			Agency Response
Reviewer	Comment Location	Comment	
	United States	<p>As FAO prepares the draft final project document for CEO endorsement, we urge FAO to:</p> <p>1. Explain how the project will consider the role that upstream hydropower is having on Tonle Sap as most studies have consistently said hydropower is affecting the Tonle Sap's seasonal flows, adding arguably greater strains on the lake and radically reducing sediment flow and fisheries; we would encourage FAO to engage and incorporate the growing body of research on hydropower's effects on Tonle Sap, almost all of which also factor in climate-related variables;</p> <p>2. Consider consulting Brian Eyler at the Stimson Center's Southeast Asia program in Washington, DC, Jake Brunner at IUCN in Hanoi,</p>	<p>1. The project focuses upon the rice systems within provinces around the Tonle Sap and not the lake itself. Any indirect implications would however be duly considered.</p> <p>2. During PPG, extensive consultations took place which informed the project formulation. In relation to the proposed experts suggested here, the project team consulted with USAID at the U.S. Embassy in Phnom Penh as well as IUCN Cambodia to coordinate on ongoing activities in Cambodia and integrate relevant inputs into project development.</p> <p>3. As mentioned, extensive consultations have taken place with a range of partners and initiatives to strengthen complementarity and avoid duplication. Part of this effort has been through the SRP engagement ? both within Cambodia and across the region ? as well as in the context of the co-finance initiatives where close coordination has been undertaken, particularly with IFAD and ADB.</p> <p>4. This is explained in Section 6 of the Prodoc</p> <p>5. This has been described in detail in Part II as well as in section 3 of the Prodoc.</p> <p>6. This is described in the Prodoc and specifically in Section 2 and 4.</p> <p>7. This is covered under the project's Component 4 and also detailed in Section 8.</p>

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ANNEX C: Status of Utilization of Project Preparation Grant (PPG).
(Provide detailed funding amount of the PPG activities financing status
in the table below:

PPG Grant Approved at PIF: ???USD 200 000??			
Project Preparation Activities Implemented	GETF/LDCF/SCCF Amount (\$)		
	Budgeted Amount	Amount Spent To Date	Amount Committed
Salary professional	7,143		
Consultants (International and national)	140,972	84,848	8,197?
Contracts	7,000	7,000	
Travel	1,241	241	976
Trainings	26,863	18,440	
Local contracted labour	12,105	2,205	
General Operating expenses	4,676	178	
Total	200,000	112,912	9,173

ANNEX D: Project Map(s) and Coordinates

Please attach the geographical location of the project area, if possible.

Project target provinces, districts and communes

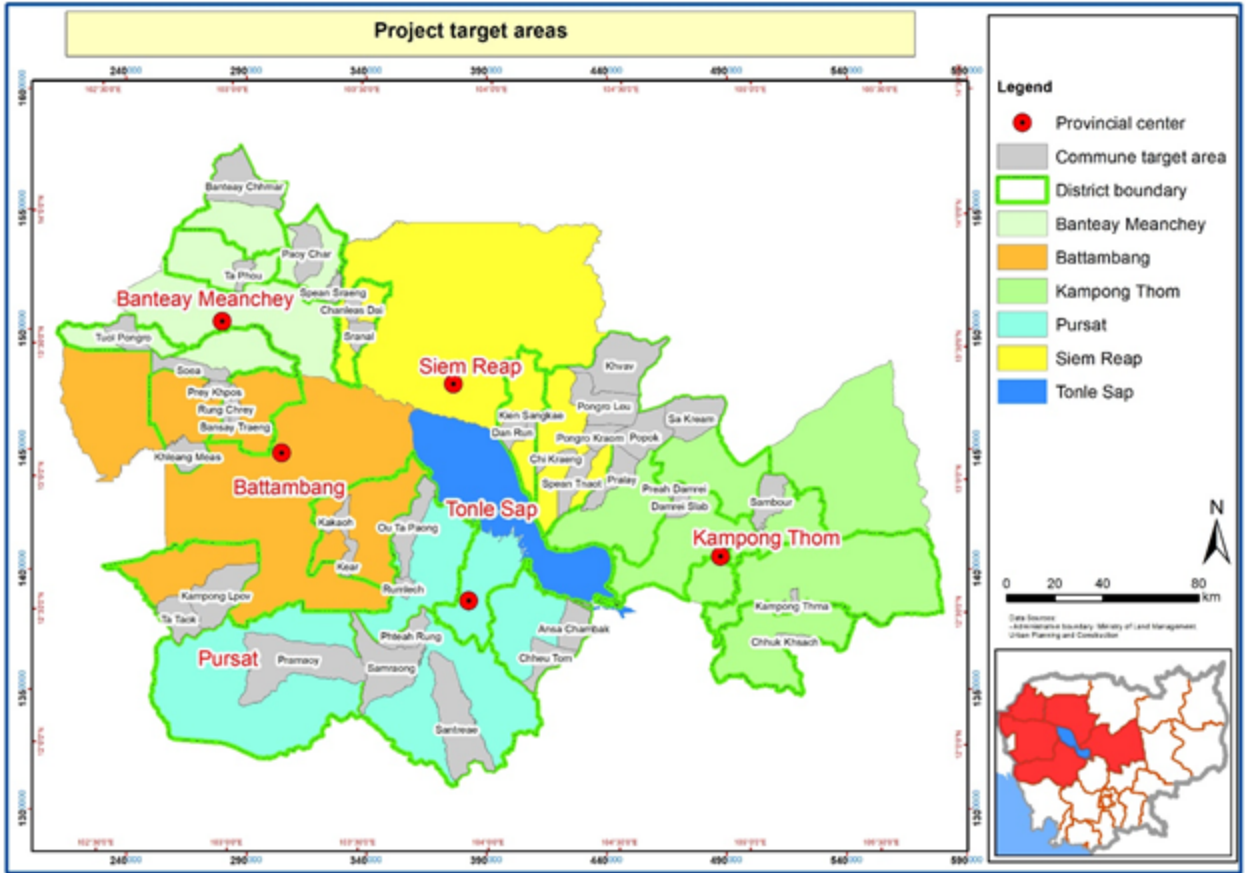


Table 8: Project target areas (provinces, district and communes)

Province (Code)	District		Commune		Site Type
	Name	Code	Name	Code	
Banteay Meanchey (01)	Mongkol Borei	0102	Soeu	10211	AC: Rice
					FG: Vegetables
	Phnum Srok	0103	Poy Char	10302	AC: Rice
					FG: Vegetables
					CPA: Kaun Khlaing (2 villages)
					CPA: Phum Nesat (7 villages)
			Spean Sraeng	10304	FG: Rice and vegetables
	Thma Puok	0107	Banteay Chhmar	10701	AC: Rice
					FG: Vegetables
	Svay Chek	0108	Ta Phou	10806	AC: Rice
					FG: Vegetables
	Malai	0109	Tuol Pongro	10905	AC: Rice
FG: Vegetables					
Battambang	Thma Koul	0202	Bansay Traeng	20209	FG: Rice and vegetables

Province (Code)	District		Commune		Site Type ₁
	Name	Code	Name	Code	
(02)			Rung Chrey	20210	AC: Samkey MeanChey
					FG: Vegetables
					PS
	Bavel	0204	Prey Khpos	20404	AC: Kdey Songkoem Kaksikor Khmer
					FG: Vegetables
					PS
			Khlaeng Meas	20407	AC: Reaksmeay Dounpov Chomroeun Phal
					FG: Vegetables
					PS
	Moung Ruessei	0206	Kear	20602	AC: Toekchet Kea Meanchey
					FG
					P
Kakoah			20607	AC: Apiwath KaksiKam KorKah	
FG					

Province (Code)	District		Commune		Site Type ¹
	Name	Code	Name	Code	
	Samlaut	0209	Ta Taok	20901	CPA: Tatok Okruoch (2 villages)
			Kampong Lpov	20902	CPA: O Chaum (2 villages)
Kampong Thom (6)	Baray	0601	Chhuk Khsach	60107	AC: Rice
					FG: vegetable group
	Kampong Svay	0602	Damrei Slab	60202	AC: rice
					FG
	Prasat Ballangk	0604	Sakream	60404	CPA: 1) O Chuhnchean; 2) Trapaing krork kor; 3) O Prasat; 4) Phnom Prang; 5) O Panha (4 villages)
					AC: Rice
	Prasat Sambour	0605	Sombour	60503	CPA: Boeng Tatel
	Santuk	0607	Kampong Thma	60703	AC: Rice
					FG: vegetable group
	Stoung	0608	Porpok	60808	CPA: Anlong kranh
Pralay			60809	AC: Rice	
Preah Damrei			60810	FG: vegetable group (home garden)	

Province (Code)	District		Commune		Site Type ¹
	Name	Code	Name	Code	
Pursat (15)	Bakan	1501	Ou Ta Paong	150105	AC: Rice and vegetable
			Rumlech	150106	AC: Rice and vegetable
	Krakor	1503	Ansa Chambak	150302	AC and FG
			Chheu Tom	150304	CPA: Teuk Thlak Chroek La Eang (4 villages)
					Rice Farmer Groups in Tas Chek, Chheu Tep, Cham Chas and Cham Thmey village
	Phnum Kravanh	1504	Santreae	150406	CPA: Raing Kvaeo
			Samraong	150407	AC: Rice and vegetable
	Veal Veang	1506	Pramaoy	15604	CPA: Tum Por
	Talou Sen Chey	1507	Phteah Rung	150702	AC: Rice
					FG: Rice
Siem Reap (17)	Chi Kraeng	1704	Chi Kraeng	170402	AC: Seed producing & rice producing
				FG: vegetable production group	
			Khvav	170404	CPA: Pnom Balang (6 villages)

Province (Code)	District		Commune		Site Type ¹				
	Name	Code	Name	Code					
			Pongro Kraom	170408	CPA: Domnak khnachtrach (4 villages)				
			Pongro Leu	170409	CPA: Prey Thom (4 villages)				
			Spean Tnoat	170412	AC: Seed producing & rice producing				
	FG: vegetable production group								
	Kralanh	1706	Chanleas Dai	170601	AC: Seed producing & rice producing				
					FG: vegetable production group				
			Sranal	170609	AC: Seed producing & rice producing				
					FG: vegetable production group				
					Soutr Nikom	1711	Dan Run	171103	AC: Seed producing & rice producing
									FG: vegetable production group
	Kien Sangkae	171105	AC: Seed producing & rice producing						
			FG: vegetable production group						

¹ AC: Agricultural Cooperative, CPA: Community Protected Area, FG: Farmer Group, PS: Private Sector

ANNEX E: Project Budget Table

Please attach a project budget table.

Budget for GCP/CMB/042/LDF "Promoting Climate-resilient Livelihoods in Rice-based Communities in the Tonle Sap Region"				Budgets by Component						
	Unit	Qty	Unit cost	Outcome 1.1	Outcome 2.1	Outcome 3.1	Outcome 4.1	M&E	PMC	Total GEF
5300 & 5500 Salaries										
5300 Sub-total - Salaries, Professionals				-	-	-	-	-	-	-
5570 Consultants										
<i>International Consultants</i>										
Lead Technical Advisor	day	600	450	43,875	84,375	84,375	57,375			270,000
International Consultant on sub-national CCA planning in the agricultural sector	day	40	450	18,000						18,000
International Consultant (master trainer for RuralInvest)	day	70	450			31,500				31,500
International Consultant to conduct vulnerability assessments in the five targeted provinces, incorporating AEZ climate modelling for longer-term adaptation planning.	day	60	450	27,000						27,000
<i>Sub-total - International Consultants</i>				88,875	84,375	115,875	57,375	-	-	346,500
<i>National Consultants</i>										
Senior Technical Advisor	mo	60	2,500	24,375	46,875	46,875	31,875			150,000
CSA Specialist	mo	60	2,000	24,000	36,000	36,000	24,000			120,000
Local Development Specialist	mo	60	2,000	24,000	36,000	36,000	24,000			120,000
Agricultural Value Chain Specialist	mo	60	2,000	24,000	24,000	60,000	12,000			120,000
M&E and Knowledge-management Specialist	mo	60	2,000	12,000	12,000	12,000	84,000			120,000
Gender Specialist	mo	60	1,300	15,600	23,400	23,400	15,600			78,000
Communication Specialist	mo	60	1,300	7,800	7,800	7,800	54,600			78,000
Operations Specialist (1 for GDA, 1 for GDLC)	mo	120	2,000	24,000	48,000	48,000	48,000		72,000	240,000
Project support officer (1 for GDA, 1 for GDLC)	mo	120	800	15,600	30,000	30,000	20,400			96,000
Provincial coordinators (3 to be based at PDAFF, 2 to be based at PDoE)	mo	300	1,200	72,000	108,000	108,000	72,000			360,000
National Consultant to connect commune-level data to the NCSD portal.	day	120	250	30,000						30,000
National Consultant to conduct vulnerability assessments in the five targeted provinces, incorporating AEZ climate modelling for longer-term adaptation planning.	day	120	250	30,000						30,000
National consultant on sub-national CCA planning in the agricultural sector	day	100	250	25,000						25,000
<i>Sub-total - National Consultants</i>				328,375	372,075	408,075	386,475	-	72,000	1,567,000
5570 Sub-total - Consultants				417,250	456,450	523,950	443,850	-	72,000	1,913,500
5650 LOAs and Contracts										
Contracts to build community infrastructure in support of Community-led Resilience Investment Plans (activities 2.1.1.7 and 2.1.3.6)	each	20	15,000		300,000					300,000
Seed capital to agricultural cooperatives/community saving groups, in support of Community-led Resilience Investment Plans (activity 2.1.1.7, 2.1.3.6, 3.1.1.5) and credit packages for rice processors (3.1.5.3)	sum	1	500,000		500,000					500,000
GIZ to deliver outputs and activities: 1.1.1.1, 1.1.1.3, 1.1.4.1, 1.1.4.3, 2.1.1.1, 2.1.1.2, 2.1.1.3, 2.1.1.4, 2.1.1.6, 2.1.4.1, 2.1.4.2, 3.1.1.1, 3.1.1.2, 3.1.1.3, 3.1.1.6, 3.1.2.1, 3.1.2.3, 3.1.2.4, 3.1.2.5, 3.1.5.1, 3.1.5.2.	sum	1	777,000	200,000	232,000	345,000	-			777,000
IRRI to deliver outputs and activities: 1.1.3.1, 1.1.3.3, 1.1.3.4, 2.1.2.2, 2.1.3.1, 2.1.3.2, 2.1.3.3, 2.1.3.5, 2.1.3.5, 3.1.3.1, 3.1.3.2, 3.1.3.3, 2.1.3.5, 3.1.3.1, 3.1.3.2, 3.1.3.3, 3.1.3.4, 3.1.4.1, 3.1.4.2, 4.1.5.2.	sum	1	798,000	230,000	148,000	360,000	60,000			798,000
WCS to deliver outputs and activities: 2.1.1.1, 2.1.1.2, 2.1.1.3, 2.1.1.4, 2.1.1.6, 2.1.3.1, 2.1.3.2, 2.1.3.3, 2.1.3.5, 3.1.3.7, 3.1.3.8, 4.1.2.3.	sum	1	625,000	-	245,000	300,000	80,000			625,000
ICRISAT to deliver deliver outputs and activities 4.1.2.1, 4.1.3.1.	sum	1	90,000	-	-	-	61,550	28,450		90,000
Baseline survey	sum	1	50,000					50,000		50,000
Endline survey	sum	1	50,000					50,000		50,000
OP Audit and spot-checks & risk mitigation activities	sum	1	150,000						150,000	150,000
Support to International Platform/ Initiatives (Output 4.1.4.)	sum	1	50,000				50,000			50,000
Mid-term evaluation (6116) (Output 4.1.2.)	each	1	50,000					50,000		50,000
Final/ Terminal evaluation (6116) (Output 4.1.2.)	each	1	82,000					82,000		82,000
Processing of final report (Output 4.1.2.)	each	1	6,550					6,550		6,550
5650 Sub-total - LOAs and Contracts				430,000	1,425,000	1,005,000	251,550	267,000	150,000	3,528,550
5900 Travel										
International travel	sum	1	60,000	12,000	12,000	12,000	24,000			60,000
Domestic travel (project consultants, DSA, car rental)	month	60	4,000	28,800	48,000	48,000	48,000		67,200	240,000
Domestic travel (government counterparts, DSA, travel allowances)	month	60	3,700	55,500	55,500	55,500	55,500			222,000

5900 Sub-total - Travel					96,300	115,500	115,500	127,500	-	67,200	522,000
5920 Training											
Project inception workshop	ws	1	5,000					5,000			5,000
Mid-term review workshop	ws	1	5,000					5,000			5,000
Project dissemination workshop	ws	1	5,000					5,000			5,000
Annual PSC and AWP/B meetings	ws	5	3,500					17,500			17,500
Provincial workshops	ws	5	2,500					12,500			12,500
Training and application of vulnerability assessments in the five targeted provinces, incorporating AEZ climate modelling for longer-term adaptation planning (Activity 1.1.1.2)	sum	1	71,000	71,000							71,000
ToT for incorporating VRAs, AEZ scenario-modelling, and C-PRAP (activity 1.1.1.4)	sum	1	45,000	45,000							45,000
Inter-sectoral network for scenario-building for CCA planning for Cambodia and the Tonle Sap Plain (activity 1.1.2.1)	sum	1	40,000	40,000							40,000
Consultation workshops/meetings for sub-national CCA planning in the agricultural sector (activity 1.1.2.3)	sum	1	50,000	50,000							50,000
Training, capacity development of water-related planning and decision-making for agricultural CCA (Activity 1.1.3.2)	sum	1	50,000	50,000							50,000
Training, meeting, workshop for adoption-ready policies to support market-based incentive mechanisms including standard-based production and financing options for climate-resilient approaches in the agricultural sector (Activity 1.1.4.2)	sum	1	100,000	100,000							100,000
Deliver the FFSs, including piloting diversification approaches with lead farmers and incentives for adoption and continuation (Activity 2.1.1.5)	com	39	10,000		390,000						390,000
Local demonstrations of selected varieties via model farmers, train and support farmer groups in production of locally prioritized standards-based production e.g. certified seeds, PGS, CamGAP, organic etc (Activity 2.1.2.1, 3.1.3.5)	group	20	6,000		120,000						120,000
Pilot climate-adaptive technologies and practices with lead farmers and offer incentives for adoption and continuation (Activity 2.1.3.4)	com	39	5,000		195,000						195,000
Training and support to pilot village-level 'centers of excellence' as a mechanism to build networks among farmers, extension officials, and private-sector actors (activity 2.1.3.7)	dis	3	20,000		60,000						60,000
Deliver FFS packages for financial literacy (Activity 2.1.4.3)	sum	1	75,000		75,000						75,000
Deliver capacity-building packages including RuralInvest to selected Acs/farmer organizations (Activity 3.1.1.4)	sum	1	240,000			240,000					240,000
Facilitate and scale-up contract farming (Activity 3.1.2.2)	ac	26	5,000			130,000					130,000
Execute and update the project's stakeholder engagement plan (Activity 4.1.1.1)	sum	1	50,000					50,000			50,000
Execute and update the project's communication plan (Activity 4.1.1.2)	sum	1	50,000					50,000			50,000
Training and support to execute the project's monitoring and evaluation plan. (Activity 4.1.2.2)	sum	1	60,000					60,000			60,000
Provincial multi-stakeholder workshops to foster value-chain-related networks (Activity 4.1.5.1)	sum	1	58,717					58,717			58,717
5920 Sub-total - Training					356,000	840,000	370,000	263,717	-	-	1,829,717
6000 Expendable Procurement											
Foundation/registered seeds for farmer groups in production of certified seeds	t	15	3,500			52,500					52,500
Agricultural inputs for demonstration farms, and on-farm diversification	sum	1	250,000		250,000						250,000
Materials/inputs for setting up of community basic infrastructure in support of Community-led Climate Resilient Initiatives (activity 2.1.1.7 and 2.1.3.6)	sum	1	300,000		300,000						300,000
Communication (internet, phone)	mo	60	700							42,000	42,000
Office supply and consumables	sum	60	700							42,000	42,000
6000 Sub-total - Expendable Procurement					-	602,500	-	-	-	84,000	686,500
6100 Non-expendable Procurement											
Climate-adaptive technologies and assets to ACs in targeted communities based on approved proposals (3.1.4.3)	sum	1	400,000				400,000				400,000
Computer, printer, projector, electronics etc.	sum	1	30,000							30,000	30,000
Furniture, common equipment, and renovation	sum	1	15,000							15,000	15,000
6100 Sub-total - Non-expendable Procurement					-	-	400,000	-	-	45,000	445,000
6150 Technical Support Services											
6150 Sub-total, Technical Support Services											
6300 General Operating Expenses (GOE; ≤ 5%)											
Fuel, and other operating costs	sum	1	7,153							7,153	7,153
6300 Sub-total - GOE					-	-	-	-	-	7,153	7,153

ANNEX F: (For NGI only) Termsheet

Instructions. Please submit an finalized termsheet in this section. The NGI Program Call for Proposals provided a template in Annex A of the Call for Proposals that can be used by the Agency. Agencies can use their own termsheets but must add sections on Currency Risk, Co-financing Ratio and Financial Additionality as defined in the template provided in Annex A of the Call for proposals. Termsheets submitted at CEO endorsement stage should include final terms and conditions of the financing.

ANNEX G: (For NGI only) Reflows

Instructions. Please submit a reflows table as provided in Annex B of the NGI Program Call for Proposals and the Trustee excel sheet for reflows (as provided by the Secretariat or the Trustee) in the Document Section of the CEO endorsement. The Agency is required to quantify any expected financial return/gains/interests earned on non-grant instruments that will be transferred to the GEF Trust Fund as noted in the Guidelines on the Project and Program Cycle Policy. Partner Agencies will be required to comply with the reflows procedures established in their respective Financial Procedures Agreement with the GEF Trustee. Agencies are welcomed to provide assumptions that explain expected financial reflow schedules.

ANNEX H: (For NGI only) Agency Capacity to generate reflows

Instructions. The GEF Agency submitting the CEO endorsement request is required to respond to any questions raised as part of the PIF review process that required clarifications on the Agency Capacity to manage reflows. This Annex seeks to demonstrate Agencies' capacity and eligibility to administer NGI resources as established in the Guidelines on the Project and Program Cycle Policy, GEF/C.52/Inf.06/Rev.01, June 9, 2017 (Annex 5).