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INTERNATIONAL DEVELOPMENT ASSOCIATION
PROJECT APPRAISAL DOCUMENT
ON A
PROPOSED CREDIT
IN THE AMOUNT OF US\$125.00 MILLION
TO THE
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
FOR A
CLIMATE SMART IRRIGATED AGRICULTURE PROJECT
FEBRUARY 13, 2019

Agriculture Global Practice
South Asia Region

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CURRENCY EQUIVALENTS
(Exchange Rate Effective October 25, 2018)

Currency Unit = Sri Lankan Rupee (LKR)
LKR 169.20 = US\$1

FISCAL YEAR
January 1–December 31

ABBREVIATIONS AND ACRONYMS

ACAD	Assistant Commissioner Agrarian Development
AI	Agriculture Instructor
ASC	Agrarian Service Center
ASMP	Agriculture Sector Modernization Project
CBSL	Central Bank of Sri Lanka
CMC	Cascade Management Committee
CO	Country Office
CPF	Country Partnership Framework
CRIP	Climate Resilience and Improvement Project
CSA	Climate-smart Agriculture
CSC	Common Service Center
CSIAP	Climate Smart Irrigated Agriculture Project
DA	Designated Account
DAD	Department of Agrarian Development
DoA	Department of Agriculture
DPD	Deputy Project Director
DS	Divisional Secretary
DSWRPP	Dam Safety and Water Resources Planning project
EA	Environmental Assessment
EAMF	Environmental Assessment and Management Framework
EFA	Economic and Financial Analysis
EIA	Environmental Impact Assessment
EIRR	Economic Internal Rate of Return
EMP	Environmental Management Plan
ENPV	Economic Net Present Value
EX-ACT	Ex-Ante Carbon-balance Tool
FAO	Food and Agriculture Organization of the United Nations
FBS	Farmer Business School
FM	Financial Management
FMS	Financial Management Specialist
FO	Farmer Organization

GAP	Gender Action Plan
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GN	Grama Niladhari
GND	Grama Niladhari Division
GoSL	Government of Sri Lanka
GRS	Grievance Redress System
GSPC	Grama Shakthi People's Company
HDI	Human Development Index
HSAWMP	Hot Spot Area Water Management Plan
ICB	International Competitive Bidding
ICT	Information and Communication Technology
ID	Irrigation Department
IDA	International Development Association
IPF	Investment Project Financing
IPM	Integrated Pest Management
ITK	Indigenous Technical Knowledge
IUFR	Interim Unaudited Financial Report
IWMI	International Water Management Institute
KPI	Key Performance Indicator
M&E	Monitoring and Evaluation
MIS	Management Information System
MAREALDIFAR	Ministry of Agriculture, Rural Economic Affairs, Livestock Development, Irrigation and Fisheries & Aquatic Resources
MMDE	Ministry of Mahaweli Development and Environment
MIHAPCLG	Ministry of Internal & Home Affairs, Provincial Councils and Local Government
MNPEARRNPDVTSDYARRNPDVTSDYA	Ministry of National Policies, Economic Affairs, Resettlement & Rehabilitation, Northern Province Development, Vocational Training & Skills Development and Youth Affairs
MPADM	Ministry of Public Administration and Disaster Management
NCB	National Competitive Bidding
NGO	Nongovernmental Organization
NPCC	National Project Steering Committee
NPV	Net Present Value
O&M	Operation and Maintenance
PAT	Project Appraisal Team
PC	Provincial Council
PCC	Project Coordination Committee
PD	Project Director

PDO	Project Development Objective
PG	Producer Group
PID	Provincial Irrigation Department
PIM	Participatory Irrigation Management
PIP	Project Implementation Plan
PMP	Pest Management Plan
PMU	Project Management Unit
PP	Procurement Plan
PPSD	Project Procurement Strategy for Development
QA	Quality Assurance
R&D	Research and Development
RPF	Resettlement Policy Framework
SBD	Standard Bidding Document
SESA	Strategic Environmental and Social Assessment
SORT	Systematic Operations Risk-rating Tool
SRI	System of Rice Intensification
TA	Technical Assistance
WFP	World Food Programme
WOP	Without Project
WP	With Project

Regional Vice President: Hartwig Schafer

Country Director: Idah Z. Pswarayi-Riddihough

Senior Global Practice Director: Juergen Voegele

Practice Manager: Mary Kathryn Holifield

Task Team Leader(s): Seenithamby Manoharan; Shyam KC ; Andrew D. Goodland



BASIC INFORMATION

Country(ies)	Project Name	
Sri Lanka	Climate Smart Irrigated Agriculture Project	
Project ID	Financing Instrument	Environmental Assessment Category
P163742	Investment Project Financing	B-Partial Assessment

Financing & Implementation Modalities

<input type="checkbox"/> Multiphase Programmatic Approach (MPA)	<input checked="" type="checkbox"/> Contingent Emergency Response Component (CERC)
<input type="checkbox"/> Series of Projects (SOP)	<input type="checkbox"/> Fragile State(s)
<input type="checkbox"/> Disbursement-linked Indicators (DLIs)	<input type="checkbox"/> Small State(s)
<input type="checkbox"/> Financial Intermediaries (FI)	<input type="checkbox"/> Fragile within a non-fragile Country
<input type="checkbox"/> Project-Based Guarantee	<input type="checkbox"/> Conflict
<input type="checkbox"/> Deferred Drawdown	<input type="checkbox"/> Responding to Natural or Man-made Disaster
<input type="checkbox"/> Alternate Procurement Arrangements (APA)	

Expected Approval Date	Expected Closing Date
07-Mar-2019	30-Jun-2024

Bank/IFC Collaboration

No

Proposed Development Objective(s)

The Project Development Objective is to improve the productivity and climate resilience of smallholder agriculture in selected hotspot areas.

Components

Component Name	Cost (US\$, millions)
Agriculture Production and Marketing	42.00



Water for Agriculture	92.00
Project Management	6.00
Contingent Emergency Response	0.00

Organizations

Borrower: Democratic Socialist Republic of Sri Lanka

Implementing Agency: Ministry of Agriculture

PROJECT FINANCING DATA (US\$, Millions)

SUMMARY

Total Project Cost	140.00
Total Financing	140.00
of which IBRD/IDA	125.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Development Association (IDA)	125.00
IDA Credit	125.00

Non-World Bank Group Financing

Counterpart Funding	15.00
Borrowing Agency	10.00
Local Beneficiaries	5.00

IDA Resources (in US\$, Millions)

	Credit Amount	Grant Amount	Guarantee Amount	Total Amount
Transitional Support	125.00	0.00	0.00	125.00
Total	125.00	0.00	0.00	125.00



Expected Disbursements (in US\$, Millions)						
WB Fiscal Year	2019	2020	2021	2022	2023	2024
Annual	5.00	20.00	35.00	30.00	30.00	5.00
Cumulative	5.00	25.00	60.00	90.00	120.00	125.00

INSTITUTIONAL DATA

Practice Area (Lead)	Contributing Practice Areas
Agriculture	Climate Change

Climate Change and Disaster Screening
 This operation has been screened for short and long-term climate change and disaster risks

Gender Tag

Does the project plan to undertake any of the following?

a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF	Yes
b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment	Yes
c. Include Indicators in results framework to monitor outcomes from actions identified in (b)	Yes

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	● Substantial
2. Macroeconomic	● Moderate
3. Sector Strategies and Policies	● Substantial
4. Technical Design of Project or Program	● Substantial
5. Institutional Capacity for Implementation and Sustainability	● Substantial
6. Fiduciary	● Moderate



7. Environment and Social	● Moderate
8. Stakeholders	● Moderate
9. Other	
10. Overall	● Substantial

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

Yes No

Does the project require any waivers of Bank policies?

Yes No

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	✓	
Performance Standards for Private Sector Activities OP/BP 4.03		✓
Natural Habitats OP/BP 4.04	✓	
Forests OP/BP 4.36	✓	
Pest Management OP 4.09	✓	
Physical Cultural Resources OP/BP 4.11		✓
Indigenous Peoples OP/BP 4.10		✓
Involuntary Resettlement OP/BP 4.12	✓	
Safety of Dams OP/BP 4.37	✓	
Projects on International Waterways OP/BP 7.50		✓
Projects in Disputed Areas OP/BP 7.60		✓

Legal Covenants

Sections and Description

Institutional Arrangements (Section I A, Schedule 2 of Credit Agreement): The Recipient shall maintain throughout the period of implementation of the project the following structure, all with functions, composition, staffing and resources acceptable to the IDA: (1) the Project Coordination Committee (PCC); (2) National Project Steering



Committee (NPSC); (3) the Project Management Unit (PMU); (4) National level Deputy Project Director’s (DPD) Offices; and (4) Provincial level Deputy Project Director’s Offices with their district and divisional units as agreed in the Project Implementation Plan (PIP).

Project Implementation Plan (PIP) (Section I B, Schedule 2 of Credit Agreement): The Recipients shall ensure that the Project is carried out in accordance with the arrangements and procedures set out in the Project Implementation Manual (provided, however, that in the case of any conflict between the arrangements and procedures set out in the said manual and the provisions of this Agreement, the provisions of this Agreement shall prevail), and except as the IDA shall otherwise agree in writing, shall not amend, abrogate or waive any provision of the said Plan. The Recipient shall, not later than December 31, 2018, finalize and adopt this Plan in form and substance satisfactory to the IDA.

Conditions

PROJECT TEAM

Bank Staff

Name	Role	Specialization	Unit
Seenithamby Manoharan	Team Leader(ADM Responsible)	Water Resources Planning and Development	GFA06
Andrew D. Goodland	Team Leader	Co-TTL	SACSL
Shyam KC	Team Leader	Co-TTL	GWA09
Asif Ali	Procurement Specialist(ADM Responsible)	Procurement	GGOPZ
Dassanayake Mudiyanseelage Anul Harasgama	Financial Management Specialist	Financial Management	GGOIS
Bandita Sijapati	Social Safeguards Specialist	Social Safeguards	GSU06
Christine Heumesser	Team Member	GHG Calculations	GFAGE
Darshani De Silva	Environmental Safeguards Specialist	Environmental Safeguards	GEN06
Deepika Eranjanie Attygalle	Team Member	Nutrition	GHN06
Eli Weiss	Team Member	Value Chains	GFA02
Krishna Pidatala	Team Member	ICT	GTD11
Meredith Mercedes Stickler	Team Member	Climate Smart	GFA12



Omar Lyasse	Team Member	Climate Resilience	GFA12
Ramziath Teni Ola Abebi Adjao	Team Member	Agriculture Economics	GFA12
Rohan G. Selvaratnam	Team Member	Operations	GFA12
Samanmalee Kumari Sirimanne	Team Member	Team Assistant	SACSL
Suranga Sooriya Kumara Kahandawa	Team Member	Disaster Risk Management	GSU18
Tisarani Rathnija Arandara	Team Member	Finance and Markets	GFCS1
Extended Team			
Name	Title	Organization	Location
Amballur Joseph James	Environment and Natural Resource Economist	FAO - Consultant	New Delhi,India
Azhar Khan	M & E Consultant	FAO – Consultant	San Francisco,United States
Dines Kumar Manhachery	Hydrologist	FAO – Consultant	New Delhi,India
Gamini Wickremasinghe	Social Development and Safeguards Specialist	Consultant	Colombo,Sri Lanka
Mohamed Ameen	Financial Management Specialist	Consultant	Colombo,Sri Lanka
Nihal Fernando	Senior Irrigation Engineer	Consultant	Colombo,Sri Lanka
R.K. Malhotra	Construction Specialist-Consultant	Consultant	New Delhi,India
Saman Wijesiri	M&E Specialist	Consultant	Colombo,Sri Lanka
Sarath Wickramaratne	Institutional Specialist	Consultant	Colombo,Sri Lanka
Sepali Kottegoda	Gender Specialist	Consultant	Colombo,Sri Lanka
Sundaralingam Sutharakaran	GIS Specialist	Consultant	Batti, Sri Lanka
Thomas Muenzel	Senior Economist	FAO	Bangkok,Thailand



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I. STRATEGIC CONTEXT

A. Country Context

1. **Sri Lanka is a Lower Middle-Income country with a GDP per capita of US\$ 4,065 (2017) and a total population of 21.4 million people.** Following 30 years of civil war that ended in 2009, Sri Lanka's economy grew at an average 5.8 percent annually during the period of 2010-2017, reflecting a peace dividend and a determined policy thrust towards reconstruction and growth, although there were some signs of a slowdown in the last few years. The economy is transitioning from a predominantly rural-based economy towards a more urbanized economy oriented around manufacturing and services. Economic growth has contributed to the decline in the national poverty headcount ratio from 15.3 percent in 2006/07 to 4.1 percent in 2016. Extreme poverty is rare and concentrated in some geographical pockets.
2. **The Government that came to power in 2018 envisions promoting a globally competitive, export-led economy with an emphasis on inclusion.** It has indicated keenness to undertake reforms in the areas of public finance, competitiveness, governance, and education. In 2017, the Government presented Vision 2025, a policy document that both identified economic limitations due to the constrained fiscal space and presented structural reforms (including the promotion of private sector participation) to address key economic challenges and strengthen economic growth.
3. **Sri Lanka is vulnerable to climate-related natural disasters that have major economic impacts.** Long-term, annual losses for housing, infrastructure, agriculture, and relief from natural disasters are estimated at LKR 50 billion (US\$327 million), with the highest annual expected losses from floods, cyclones or high winds, droughts, and landslides. This is equivalent to 0.4 percent of GDP or 2.1 percent of GoSL expenditures. Due to the increased sophistication of the economy, the damage caused by the 2016 and 2017 floods and landslides was more than twice as high in US\$ terms than the worst flood disasters between 1992 and 2011.

B. Sectoral and Institutional Context

4. **The agriculture sector remains the backbone of Sri Lanka's culture and economy.** The agriculture sector contributes 6.9 percent to GDP and employs approximately 27 percent of the population. Of the country's approximately 2.3 million hectares (ha) of agricultural land, around 80 percent is under smallholder production, with around 1.65 million smallholder farmers operating on average less than 2 ha. The focus of the GoSL on self-sufficiency in rice has limited farmers' opportunities to diversify into higher-value products and kept the sector concentrated in the low-value food crops. As a result, agriculture productivity, as measured by Total Factor Productivity, has only grown by an average of 0.6 percent per year since 1980 and Sri Lanka lags significantly behind other South and East Asian countries. Women contribute to over 38 percent of the farming operations in Sri Lanka. However, the unemployment rates of women are more than double that of men at all age levels, with more than 60 percent of women engaged in agriculture working as unpaid family labor.
5. **Irrigation is a key feature of the smallholder agriculture sector.** Sri Lanka has a long history of water management for agriculture production. The expansion of crop cultivation into the dry zones of the north, east, and southeast of the country was enabled through the construction of elaborate water management systems, dating back to the period between 500 BC and 300 AD. The systems are based on



water capture in small reservoirs commonly known as ‘tanks’ connected through canals into ‘cascades’. Recently, water scarcity has increased because of high inter-annual and inter-seasonal variability in rainfall, catchment area land use changes which have reduced the proportion of rainfall available for capture in downstream tanks, and the growing demand for water to meet the needs of a growing population.

6. **Hotspot areas are the most vulnerable to climatic events.** Although much of the country has been subject to the increased frequency and severity of climate events, some areas have emerged as being particularly susceptible to either flood or drought events, or both. These are areas that are predominantly agriculture based and therefore the livelihoods of smallholder farmers are at risk. Hotspots have been identified through a rigorous analysis of empirical evidence by the Department of Agrarian Development (DAD) of the Ministry of Agriculture (MAREALDIFAR), the World Food Programme (WFP), and the International Water Management Institute (IWMI).

7. **The management of irrigation water suffers from institutional fragmentation and lack of local accountability.** The management of irrigation tanks has undergone a transformation in the post-independence period. Participatory Irrigation Management (PIM), involving local communities in the management of irrigation schemes, was approved as official policy in 1992, and Farmer Organizations (FOs) were created by the Agrarian Services Act of 1991 to manage minor tanks. Despite this policy direction, the low capacity of FOs to manage limited remaining water and lack of strong oversight from the GoSL have led to weak management. Within the GoSL, the responsibility for the management of these tanks currently lies with three different institutions: The Ministry of Irrigation, Water Resources, and Disaster Management (MIWRDM); MAREALDIFAR; and Provincial Councils (PCs). The responsibility for system maintenance budgeting and implementation is shared across these institutions and FOs, often with unclear mandates. Water user fees were removed after independence, and the GoSL started to allocate maintenance budgets, which are insufficient to meet maintenance needs. In response, FOs often collect contributions from farmers and maintain their own Operation and Maintenance (O&M) funds.

8. **While many of the tanks are still functioning, some are in a completely dilapidated condition and the overall performance is low.** Past tank rehabilitation efforts have largely failed to produce the desired results for many reasons. First, insufficient attention has been paid to water and land use management in the upstream catchment areas, and as a result the supply of water from upstream catchment areas is decreasing with increased downstream siltation. Second, previous rehabilitation efforts have not adequately accounted for the hydraulic interconnectedness of tanks within cascades resulting in suboptimal development of water resources and negative downstream impacts. Finally, past rehabilitation efforts have not sufficiently factored in either growing water demand in the tank command areas or the likely future impacts of climate change, and as a result rehabilitated tanks have failed to provide enough water supply to meet even current demand.

9. **Improved access to irrigation and better water management needs to be addressed in conjunction with improving productivity in the sector.** With rice self-sufficiency secured, a consensus has recently emerged within the GoSL that the country should take a more strategic approach to addressing low productivity by (a) modernizing water resource infrastructure, minimizing flood damages, and managing water allocation more efficiently and (b) diversifying the agriculture sector away from relatively low-value food crops toward high-value and export-oriented commodities. In the water sector, an integrated basin approach to water investment and management needs to be built on integrated basin plans developed through effective stakeholder participation. As a middle-income country in an



economically strong region, farmers can capitalize on growing domestic consumer demand for diversified, nutritious, and higher-valued foods and take advantage of the country's proximity to fast-growing neighboring markets. The GoSL has recently implemented measures to improve the competitiveness of the agriculture sector under the World Bank–supported Agriculture Sector Modernization Project (ASMP).

C. Higher Level Objectives to which the Project Contributes

10. The proposed project is aligned with all three pillars of the World Bank Group's Country Partnership Strategy (CPS) FY17–FY20 discussed by the Board on June 28, 2016 (Report 104606-LK). The project will directly support the achievement of the CPF's objective 3.2 under Pillar 3 to strengthen climate resilience and disaster risk management. Further, under Pillar 2, 'Promoting Inclusion Opportunities for All', the project will contribute to Objective 2.3 to improve living conditions in lagging regions as most of the hotspot areas to be supported under the project fall into this category. The project will also support increased competitiveness (Pillar 1) through increased productivity of the agriculture sector and as such would also support the corporate priority of Maximizing Finance for Development through enabling increased private finance in the sector. Finally, the project is aligned to the cross-cutting themes of gender and governance, with activities to enhance the participation of women and a focus of improving the governance of natural resources, and specifically of water for agriculture. The project supports the implementation of the World Bank's Climate Change Action Plan in the South Asia Region. It also aims at contributing significantly to the GoSL's efforts to increase production and productivity, as well as alleviate extreme poverty and malnutrition. The GoSL's national program for food production aims at increasing agriculture production and productivity with the overall purpose to reduce dependency on food imports and improve the sector's value added and its contribution to the national economy. The project is aligned with the Sustainable Development Goals, especially with the aim to double agriculture productivity by 2030 under Goal 2, increase efficiency of water use under Goal 6 and the inclusion of climate change measures in national planning and investment under Goal 13.

II. PROJECT DEVELOPMENT OBJECTIVES (PDO)

A. PDO

11. The Project Development Objective is to improve the productivity and climate resilience of smallholder agriculture in selected hotspot areas.

B. Project Beneficiaries

12. A hotspot is a geographic area (about 25,000 ha on average) where farmers and farming livelihoods are highly exposed and vulnerable to increasing climatic variability, based on: (a) drought and flood impacts including crop losses and expenditures on drinking water and relief supplies; (b) current climate vulnerability based on income poverty, housing quality, source of drinking water, and participation in safety net programs; and (c) future climate vulnerability up to 2030 based on an index of 42 indicators measuring exposure, sensitivity, and adaptive capacity.

13. Climate resilience is defined as the capacity of agricultural systems to respond to drought and flood by resisting or tolerating the impacts and recovering quickly, through integration of adaptation, mitigation, and other climate-smart agriculture (CSA) practices.



14. The primary project beneficiaries will be over 470,000 smallholder farmers in hotspot areas (375,000 ha) in 11 administrative districts (Kilinochchi, Mullaitivu, Anuradhapura, Polonnaruwa, Puttalam, Kurunegala, Trincomalee, Batticaloa, Ampara, Hambantota, and Moneragala) spread across six provinces (Northern, North Central, North Western, Eastern, Southern, and Uva) in the dry zone of Sri Lanka (see Project Area in Annex 7). Smallholder farmers consist of small farmers (1.0–2.0 ha of farmland) and marginal farmers (less than 1.0 ha). They will gain knowledge and technology transfer and access to infrastructure assets to enhance climate resilience in farming resulting in increased revenue from crop diversification and participation in emerging value chains. Many technical and managerial staff of the participating agencies will benefit through training and capacity-building activities. The project will also promote the participation of youth and women in all key project interventions to ensure that they would benefit from the project activities.

C. PDO-Level Results Indicators

15. The key performance indicators (KPIs) to assess project outcomes are
- KPI 1: Increase in water productivity at farm level (Custom);
 - KPI 2: Increase in agriculture productivity of crops (Custom);
 - KPI 3: Increase in catchment area with water conservation practices (Custom);
 - KPI 4: Crop diversification index (Custom); and
 - KPI 5: Direct project beneficiaries, segregated by gender (Corporate Results Indicator).

III. PROJECT DESCRIPTION

A. Project Components

16. **Component 1: Agriculture Production and Marketing (US\$42 million).** The objective of this component is to improve agriculture productivity and diversification through the adoption of Climate Smart Agriculture (CSA) practices and improved on-farm water management.

17. **Subcomponent 1.1: Climate Smart Agriculture and Water Technology (US\$21 million).** This subcomponent will support the adoption of CSA and will focus on (a) demonstrating the effectiveness of CSA practices in farmers' fields through Farmer Business Schools (FBSs) and leveraging information and communication technology (ICT) for peer-to-peer learning and (b) supporting the uptake of CSA practices by establishing Producer Groups (PGs). The key activities to be financed include: (a) Technical assistance (TA) to carry out detailed assessments to identify appropriate technologies relevant to each mini-watershed, including climate impacts and gender analysis; (b) TA to develop and deliver training on climate-resilient practices and technologies to extension agents of the Government and the private sector, including on the requirements for adoption; (c) the delivery of agronomic extension services to PGs through effective extension approaches (for example, field demonstrations and training events) including the use of proven water management technologies and ICTs to facilitate adoption of climate-resilient



practices and technologies; and (d) capacity development for PGs and support to investments associated with technology transfer to PGs on a pilot basis.

18. **Subcomponent 1.2: Marketing (US\$21 million).** This subcomponent aims to strengthen the links between PGs and the agriculture commodity markets by: (a) upgrading and/or rehabilitating critical market infrastructure and (b) supporting farmers to access markets and develop sustainable links to agribusinesses. The key activities to be financed are: (a) common infrastructure for agri-commodity marketing (markets, storage, and access roads) and the construction and/or upgrading of Common Service Centers (CSCs); and (b) TA to support PGs to commercialize and link with agribusinesses.

19. **Component 2: Water for Agriculture (US\$92 million).** The objective of this component is to facilitate (a) planning for water and other infrastructure necessary to support climate-resilient irrigated agriculture, (b) construction of the planned infrastructure, and (c) co-management of this infrastructure by central/provincial governments and the local community.

20. **Subcomponent 2.1: Rehabilitation of Irrigation Systems (US\$86 million).** This subcomponent will support the rehabilitation of irrigation systems based on plans derived from hydrologic modelling accounting for projected climate change in the project areas. The key activities to be financed include: (a) TA to support hydrology modelling and the preparation of Hot Spot Area Water Management Plans (HSAWMPs) at three levels: hot spots (about 25,000 ha); mini-watersheds within the hot spot areas (about 4,000 ha), including tank cascade systems, stand-alone irrigation systems, and rain-fed agriculture systems; and local administrative levels (Divisional Secretary [DS] Divisions and Grama Niladhari [GN] Divisions); (b) rehabilitation, modernization, and repair of existing cascade tanks and individual village tanks; construction of recharge wells in the tank beds; drainages and flood protection infrastructure; and (c) Field implementation of watershed treatment and water harvesting works.

21. **Subcomponent 2.2: Operation and Maintenance of Irrigation Systems (US\$6 million).** This subcomponent aims to ensure the sustainable operation and maintenance (O&M) of tank systems at the individual tank level and systemwide. The main activities to be financed are to: (a) establish Cascade Management Committees (CMCs) for each of the cascades of minor irrigation tanks within the watershed-based boundary of the hot spot areas; (b) strengthen FOs that have been set up to manage each tank; and (c) design and implement a monitoring system for water use and availability.

22. **Component 3: Project Management (US\$6 million).** The objective of this component is to ensure the quality of overall project management, while ensuring smooth coordination of activity implementation by various agencies and strategic partners at national and subnational levels. This component will finance: (a) the consultancy and operating costs of the Project Management Unit (PMU) and Deputy Project Director (DPD) Offices and of different project executing agencies, including for fiduciary and safeguard aspects; (b) the monitoring and evaluation (M&E) of project activities at baseline, midterm, and end of project, including geotagging of the assets created; and (c) information, education, and communication campaigns to make all stakeholders aware of the project.

23. **Component 4: Contingent Emergency Response (US\$0 million).** This emergency response component will allow for rapid reallocation of project proceeds in the event of a natural disaster or crisis that has caused or is likely to imminently cause a major adverse economic and/or social impact.



24. **Maximizing Finance for Development.** To deliver and sustain CSA, the project design acknowledges the key role of the private sector to innovate and invest in value chain development. Project funds will be channeled to supporting public goods such as infrastructure and addressing market failures, and thereby creating conditions for increased private sector investment. The increased productivity supported under the project will be driven both by investment in access to water and technologies to diversify and intensify agriculture production, and through improved linkages to markets. Under the marketing subcomponent, the project will support farmers to access markets, including through improved road networks and support smallholders to organize and partner with agri-businesses. This would enable increased investment by private partners involved in product collection, value addition and marketing. Where possible, the project will leverage investments made under the on-going ASMP.

B. Project Cost and Financing

25. The project will be financed through a six-year Investment Project Financing (IPF) Credit. The total project cost is US\$140 million and will be funded by an IDA Transitional Credit of US\$125 million, with the GoSL contribution of US\$10 million to cover salary costs on a parallel basis and the beneficiaries contributing US\$5 million in kind. Retroactive financing up to an aggregate amount of US\$5 million is available for eligible expenditures incurred under all project components and all categories before the date of the signed Credit Agreement, but on or after July 1, 2018.

Table 1. Project Costs by Component

Project Components	Project Cost	IDA Financing	GoSL	Beneficiaries
Agriculture Production and Marketing	42.0	37.0	2.0	3.0
Water for Agriculture	91.5	83.5	6.0	2.0
Project Management	6.0	4.0	2.0	0.0
Contingent Emergency Response	0.0	0.0	0.0	0.0
Total Costs	139.5	124.5	10.0	5.0
Project Preparatory Advance	0.2	0.2	—	—
Total Project Costs	139.7	124.7	10.0	5.0
Front-end Fees	0.3	0.3	—	—
Total Financing Required	140.0	125.0	10.0	5.0

C. Lessons Learned and Reflected in the Project Design

26. **Integrating water and agriculture.** Projects in South Asia have provided valuable insights into: the successful integration of water storage, distribution, and use; improving on-farm water use efficiency; and increasing the productive potential of natural resources (for example, soil and water) while ensuring their sustainable management through a community-based approach. This needs to be integrated with local agricultural production systems to ensure the overall objective of increasing productivity alongside climate resilience is achieved.



27. **Planning at scale and accommodating climate trends.** The major reason for the failure of past rehabilitation investments has been traced to the lack of sufficient and accurate information upon which key decisions were made regarding investment designs and execution. Typically, investments have been undertaken at the individual tank level, which fail to capture the importance of the entire tank cascade and catchment areas. Effective analysis and planning need to be conducted at the catchment level for optimal allocation and management of water. The need to respond to and anticipate the impacts of climate change on irrigated systems further elevates the value of having accurate information available to guide investment decisions.

28. **Importance of using a participatory approach.** Projects that have underappreciated the value of farmer involvement, or invited their participation too late in the process, have failed. The substantive involvement of all water users will be essential throughout the project, from mobilizing local knowledge in the development of solutions to local challenges, to establishing the basis of sustained infrastructure maintenance, the design and holistic management of tank catchment areas, and management of water distribution within individual command areas and across inter-tank cascade systems.

29. **Involvement of the private sector.** Private sector–led approaches are required for the sustained growth of agricultural value chains. The role of the public sector is to both create the enabling environment for private investment and facilitate improved market links, for example, by providing essential infrastructure such as roads and support farmers to organize and professionalize to become credible partners for agribusinesses involved in value addition such as aggregation, processing, and trade.

30. **Coordination with other initiatives in the sector.** The project cannot be implemented in isolation and needs to both learn from the experience of relevant projects and actively seek coordination with other initiatives. Lessons utilized for the design of this project include (a) the ASMP (P156019); (b) Climate Resilience and Improvement Project (CRIP) (P146314); and (c) Dam Safety and Water Resources Planning Project (P093132).

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

31. **Institutional arrangements.** The project is fully integrated within the GoSL administration, and the project implementation is designed to capitalize on existing government agencies at all levels. The participating departments will carry out the project activities within their mandates, but coordinated by provincial DPD offices, with district units established at the Department of Agriculture (DoA)/Provincial Irrigation Department (PID)/Assistant Commissioner Agrarian Development (ACAD) offices and divisional units established at Agrarian Service Centers (ASCs). Amendments to the present Agrarian Development Act of 2000 are being processed to ensure that FOs will be strengthened to perform participatory management of the minor irrigation schemes and CMCs will be established to manage the cascades along with the DAD and PID. All PGs will become part of the respective FOs. At the district level, there will be a district unit of the provincial DPD office set up at the agriculture/irrigation/agrarian office, and it will be led by the head of that office. At the divisional level, there will be a divisional unit of the provincial DPD office set up at the ASC, headed by the Divisional Officer of the ASC. The institutional arrangement is further described in Annex 2.



32. **Implementation arrangements.** The overall project implementation is the responsibility of the Ministry of Agriculture, Rural Economic Affairs, Livestock Development, Irrigation and Fisheries & Aquatic Resources (MAREALDIFAR). The project will draw expertise from the DOA, DAD, and Irrigation Department (ID) and acquire outside expertise, including consulting services. The day-to-day management and operation of the project are the responsibility of the PMU, headed by a Project Director (PD) appointed by the MAREALDIFAR and assisted by the national-level DPD's offices in the ID and the Ministry of Internal & Home Affairs, Provincial Councils and Local Government (MIHAPCLG) as well as provincial-level DPD's offices. The project will give attention to institutional coordination across departments, agencies, and strategic partners involved in the implementation of the project activities. Specifically, as the MAREALDIFAR has an existing PMU under the ASMP, core functions such as procurement, financial management (FM), and safeguards will maximize the use of existing capacity. The overall project policy guidance is the responsibility of the Project Coordination Committee (PCC), established in the Ministry of National Policies, Economic Affairs, Resettlement & Rehabilitation, Northern Province Development, Vocational Training & Skills Development and Youth Affairs (MNPEARARNPDVTSDYARRNPVTSDYA) and chaired by its Secretary. The overall project oversight is the responsibility of the National Project Steering Committee (NPSC), established in the MAREALDIFAR and chaired by its Secretary.

33. **Phasing.** In view of the complexity and innovativeness of the project and to capture lessons, the project will be rolled out gradually across the eleven districts. In Year 1, the project activities will focus on three areas (Anuradhapura, Kurunegala, and Kilinochchi districts). The remaining eight districts will be added in Year 2 and Year 3, based on readiness and completion of necessary preparation activities.

B. Results Monitoring and Evaluation

34. A web-based M&E and Management Information System (MIS) system will monitor activities, processes, inputs, and outputs to track achievements against targets, emphasizing real-time monitoring. Rigorous, quantitative impact evaluations will be undertaken to measure the outcome (transformational impacts) at the midterm review and end of the project. The M&E system is designed to: (a) collect appropriate field data using approved methods to conduct evaluations; (b) carry out actual data collection and evaluation; and (c) use the evaluations to inform decision making and resource allocations. To the extent possible, performance indicators with appropriate information to verify the output, effects, and impacts disaggregated by gender have been included in the Results Framework. Gender-disaggregated indicators for closing the gender gap include: (a) percentage change in crop yield per hectare and year because of the project; (b) percentage of beneficiary households adopting CSA practices; and (c) number of farmers who have access to and use a CSC. The Department of Project Management and Monitoring (DPMM) will monitor the project activities and submit quarterly progress reports to Cabinet of Ministers.

C. Sustainability

35. The main objective of the project is to improve the productivity and climate resilience of smallholder agriculture through long-term sustainability of irrigation infrastructure development. The infrastructure supported under the project will be identified and designed based on projections of climate change including the frequency of drought and flood events both to maximize the availability of water to farmers and also to protect land and assets from potential flooding. The duration of these investments will depend upon the strength of the arrangements put in place for O&M. This requires a combination of farmer responsibility and support from local and national authorities. FOs responsible for tank-level



irrigation will be strengthened, including collection of fees to support O&M. At the tank system, CMCs will be established to ensure that individual tanks are managed in the wider context of the system.

36. A key principle of the project's design is the integration of water and agriculture, with effective use of water to match its availability with appropriate CSA practices and technologies. Farmers will only be incentivized to manage water better if they realize the greater returns from shifting to higher-value and more diversified production systems. This also requires attention not only to production but also to facilitate farmers to access markets, both physically (for example, through roads and from storage facilities) and through better partnerships with market players such as processors and traders. PGs will be established to support improved marketing of the agriculture produce coming from the improved irrigation schemes.

37. The institutional and fund flow arrangements for the implementation of the project are a key determinant of the project's sustainability. Coordination, technical oversight, and, where applicable, activity implementation is carried out by the corresponding public institutions at the divisional, district, and provincial levels, as well as community institutions at the village level, in close consultation with the PMU and DPD offices. Thus, the project is fully embedded within the administration of the GoSL utilizing experienced, and qualified staff released from relevant ministries/departments.

38. In addition, a substantial portion of the project is dedicated to knowledge and technology transfer to scale up the adoption of agricultural technologies and agronomic practices that help build resilience at the farm level. Hence, given the tools used for the demonstration (that is, FBSs) and adoption of these technologies and practices, a spillover effect to non-project villages can be expected, further accelerating the scaling up of CSA in Sri Lanka and consolidating the sustainability of the project.

D. Role of Partners

39. The project is not financed by any other international agency, however, the GoSL has initiated discussions with Asian Infrastructure Investment Bank, regarding possible future co-financing.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

40. The overall risk rating for the project is Substantial. The rating is based on: (a) technical capacity of the implementing agencies; (b) scope and complexity of the project coordination; and (c) political economy of the agriculture policy reforms.

41. **Political and governance, and sector strategies and policies.** GoSL is strongly supportive of the modernization of the agriculture sector, as reflected in the Vision 2025 and Sustainable Sri Lanka Vision & Strategic Path documents and as demonstrated under the ASMP. The sector receives cross-party support; however, the lack of continuity of key institutional reforms, including proper devolution of management of irrigation systems and the implementation of irrigation and water sector reforms, constitute a substantial level of risk. Although the Minister of the MAREALDIFAR have confirmed the GoSL's full support in implementing the policy of devolving irrigation system management to the provincial level, the present environment and the upcoming elections may create some uncertainties in terms of potential



changes in the GoSL structure and policies. The establishment of the NPSC at the MNPEARRNPVTSYDIA and the recent initiative of the President of Sri Lanka to form a committee to oversee the integrated water resources management of river basins will be used to mitigate these risks.

42. **Technical design.** The design is complex, as is required to comprehensively address water and agriculture challenges. Successful implementation will require effective implementation of technically complex hydrology modelling and planning based on sound analysis. The adoption of climate-smart technologies is dependent upon the identification and popularization of innovative practices. The project has devoted resources to this innovation, with sufficient funds for the demonstration of new technologies including water efficiency.

43. **Institutional capacity for implementation and sustainability.** The institutional and capacity risks associated with the coordination of multiple line departments and agencies during implementation will be minimized through retaining and utilizing the capacities created during the project preparation phase, in the MAREALDIFAR, MIHAPCLGS, PMU, and DPD offices. Continued strengthening of the capacities of the implementing agencies will be undertaken as part of a comprehensive training and skills development plan under the project components. The proposed NPSC is designed to obtain services of all implementation agencies and will require high-level commitment to be effective. The PMU will have about 40 percent of its staff released from the MAREALDIFAR and another 20 percent with shared responsibilities from the PMU of the ASMP implemented by MAREALDIFAR. This innovative arrangement will ensure smooth implementation and post implementation arrangements of project activities.

VI. APPRAISAL SUMMARY

A. Economic and Financial (if applicable) Analysis

44. **Economic analysis.** The main economic project benefits are expected to come from (a) increases in the area under irrigated cultivation and resultant crop productivity increase and farmers' adoption of climate-resilient technologies; (b) diversification away from cereals into higher-value agriculture; and (c) improved postharvest management, value addition, and marketing. Potential economic benefits are also expected to accrue through flood protection regarding avoided losses and damages associated with the failure of tanks. The economic internal rate of return (EIRR) of the project over a 20-year period for the base case, excluding benefits from greenhouse gas (GHG) emission reduction, is 30.3 percent with a net present value (NPV) of LKR 35,900 million (US\$239.4 million) at a 10 percent discount rate. Placing a monetary value on potential GHG mitigation benefits in terms of reductions in GHG emissions and increased carbon sequestration (estimated at 1.5 million tCO₂eq over the project life of 20 years), the base case EIRR increases to 31.7 percent. On this basis, at the end of the 20-year period, annual GHG benefits are valued at US\$6.1 million. A sensitivity analysis was conducted to assess the impact of changes in the main parameters affecting the economic outcome of the project, showing that the project remains economically viable in the case of adverse changes in project costs and benefits. For example, a 20 percent increase in project costs combined with a 20 percent reduction in project benefits, coupled with a two-year delay of benefits, reduces the EIRR to 18.8 percent.



45. **Financial analysis.** The financial analysis has been carried out for the main agricultural production systems in the command area and upland area, comparing the improved climate-smart technologies/practices with the current technologies/practices. Detailed crop budgets have been calculated. The analysis shows considerable potential financial benefits for the project farm households in terms of increases in gross margin, net profit, return to family, and total labor for all production systems analyzed.

46. **World Bank Group value added.** The World Bank is well placed to provide value-added support to the GoSL through its global experience with CSA, its multi-sector approach, and its experience in applying knowledge at scale in support of changes in policies and strategies to promote climate adaptation and mitigation. The proposed project is based on a multi-sectoral approach and will require close collaboration across the World Bank's Global Practices (Agriculture, Water, Climate Change, and Social Urban Rural & Resilience) in design and implementation, building on the existing and pipeline portfolio.

B. Technical

47. The project adopts a multi-sector approach to building climate resilience in agriculture in the planning process that provides the basis for improved extension and CSA investment. These plans will be developed under a science-based approach and will propose a range of interventions to enhance the climate resilience of the farming systems through enhanced water use efficiency and productivity, improved soil health, and increased crop productivity. Much of the project's climate resilience agenda is at the interface between the agriculture and the water sectors. A focus of the project's climate resilience agenda is on increasing the efficiency of surface water used for agriculture while promoting a more sustainable management of upstream catchment areas. To respond to the request for an end-to-end approach on building resilience, project activities have also been developed to enhance the marketing of selected high-value smart commodity value chains to encourage the adoption of CSA practices.

C. Financial Management

48. **Financial management arrangements.** The proposed FM arrangements are in line with fiduciary requirements of OP 10.00. The PMU at the MAREALDIFAR will be responsible for the overall project FM as well as for the operation of the Designated Account (DA) for the project at the national level. In parallel, each office of the DPD will be functional at the national level, under the ID and MIHAPCLGS, respectively. At the provincial level, there will be six DPD offices established, and they are responsible for project FM activities. The FM assessments carried out for the MAREALDIFAR, MIHAPCLGS, and ID implemented by other World Bank interventions reveal that almost all PMUs are currently working with limited FM capacity. Disbursements will be report-based using interim unaudited financial reports (IUFs), reflecting six-monthly forecasted expenditures. A Designated Account (DA) would need to be opened at the Central Bank of Sri Lanka (CBSL) for disbursements. The external audit of the project will be carried out by the Auditor General of Sri Lanka. The FM framework is documented in detail in the FM manual, which will help standardize the procedures and reporting formats.

D. Procurement

49. **Procurement for the proposed project will be carried out in accordance with the World Bank Regulations for IPF Borrowers, dated July 2016, revised November 2017, hereafter referred to as**



‘Procurement Regulations’. The project will be subject to the World Bank’s Anticorruption Guidelines, dated July 1, 2016. According to the requirement of the Procurement Regulations and given that the project does not involve high-value and complex contracts, a short form of the Project Procurement Strategy for Development (PPSD) has been prepared by the GoSL, describing the overall project operational context, market situations, implementing agencies’ capacity, and possible procurement risks. The PP sets out the selection methods to be followed by the borrower during project implementation in the procurement of goods, works, and non-consulting and consulting services financed by the World Bank. The PP will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

50. The project includes several features of a highly decentralized community demand-driven project. The procurement profile is a mix of small value at the community level and high value at the PMU and DPD levels. A sizeable share of the project funds is meant to finance: (a) the implementation of the approved hot spot plans, cascade plans, tank plans, and GND plans; and (b) business proposals submitted by the PGs to be carried out by the DPDs through departments once approved. Given the limitation of funds and other ongoing programs, the activities to be funded under the plans shall be identified upfront to avoid duplication; these investments will require very close monitoring and oversight at the PMU and DPD office levels. Generally, procurement at the community level is not complex, but managing the small value and large number of activities at this highly decentralized level is challenging.

E. Social (including Safeguards)

51. **Involuntary Resettlement (OP 4.12).** The project is expected to have significant social benefits, including for smallholder farmers. Some activities supported under the project, such as the infrastructure necessary to support climate-resilient irrigated agriculture, are likely to cause, in some instances, substantial social risks and impacts, including land acquisition to be paid by the GoSL, impacts on livelihoods, loss of assets, and so on. Accordingly, these circumstances trigger the World Bank social safeguard policy OP/BP 4.12 on Involuntary Resettlement. To ensure compliance with the policies of the World Bank, the GoSL has prepared an Environmental Assessment and Management Framework (EAMF) and a stand-alone Resettlement Policy Framework (RPF). Additionally, Strategic Environmental and Social Assessments (SESAs) are being planned as part of hotspot area development to inform the HSAWMPs and/or the GND-level climate smart development plans.

52. **Citizen engagement.** The project is designed to mainstream citizen engagement activities through a coherent approach that advocates for a critical role for citizen voices in development planning and monitoring to increase transparency, accountability, and effectiveness of the public institutions engaged in project implementation. The two beneficiary feedback indicators are: (a) grievances registered related to the delivery of project benefits that are addressed - percentage by gender; and (b) beneficiaries that feel the project investment reflected their needs, which will be collected by annual satisfaction surveys.

53. **Gender.** Women play an important role in the agricultural sector in Sri Lanka but their productivity is low. Studies show that only 10 percent of female farmers receive extension services in comparison to 90 percent of male farmers. To reduce the gender gap, the extension services supported under the project will be targeted at women farmers. Additional activities have also been designed to ensure women’s full participation across all project activities, and especially ensure they have a leadership role in FOs. The project has set targets of at least 30 percent of targeted farmers receiving assets, extension services and



new technologies to be women. The Gender Action Plan (GAP) will ensure that at least 30 percent of the project benefits are received by women and they are provided with the required skills and enabling environments, including the following: (a) acknowledging women's role as farmers and as leaders at the planning stage; (b) increasing women's voices, gender equitable representation, and decision-making power, including a minimum of 30 percent women's participation in FOs and PGs and their governing committees; (c) screening all technologies to ensure that they are responsive to gender concerns and barriers for women and ensuring that the identification of lead/contract farmers will be gender-balanced; (d) supporting women's roles as caregivers and creating enabling environments for them to access services; and (e) making the Grievance Redress Mechanisms (GRMs) easily accessible to women to ensure women's participation as members at all levels.

F. Environment (including Safeguards)

54. **Environmental Assessment (OP/BP 4.01).** The project is classified as Environmental Category B. It is expected to bring positive environmental benefits to the project areas through the scale-up of climate-resilient agricultural technologies and farming practices that help improve soil health, water use efficiency, and catchment area treatment to promote more efficient use of surface water and more sustainable use of groundwater for agriculture. Components 1 and 2 may involve physical activities that could have adverse environmental impacts if environmental aspects are not fully integrated into hot spot area development plans and negative environmental impacts are not identified and mitigated properly. An EAMF has been prepared to guide the screening of activities for physical investments, TA, project-supported advisory, and policy support interventions and resulting implementation from an environmental perspective and mitigation actions to manage their environmental impacts including preparation and implementation of Environmental Assessments (EAs) and Environmental Management Plans (EMPs) to address site-specific risks and impacts and subsequent monitoring and reporting requirements. In addition to the EAMF, as part of hot spot area development, SESAs will be undertaken to be integrated into the village-level plans.

55. **Consultation and information disclosure.** Consultations with project beneficiaries and stakeholders will be conducted as part of the participatory process for planning and designing and implementing subprojects under the main investment components and to ensure adequate representation of women. The EAMF, RPF and PMP have been consulted by known stakeholders of the project and documented as part of the EAMF. The project's overall safeguards documents: the EAMF, RPF and PMP, have been reviewed and cleared by the World Bank and disclosed locally on the MAREALDIFAR website on June 15, 2018. The documents were also disclosed on the World Bank's external website. SESAs, EAs, and EMPs, as applicable for specific subprojects, will be prepared and disclosed as they become available.

56. **Disaster and climate screening.** The project has been subjected to the World Bank's Climate screening and the exposure is rated High. The districts under this project are in the dry zone, and some are coastal. They are vulnerable to the impacts of floods, drought, high winds/cyclones, and storm surge. Droughts hit these districts every 3–4 years and create significant livelihood impacts. The coastal areas of Ampara, Batticaloa, Mullaitivu, Mannar, and Hambantota are prone to potential storm surge. The rehabilitated irrigation infrastructure will follow improved designs taking account of the increased rainfall intensities. The rehabilitation of small tank systems will consider to the extent possible the potential impact of floods and droughts, and the designs will be undertaken accordingly. Climate-resilient farming



practices, such as drought/flood-tolerant crop varieties, improved water management practices, catchment management, crop diversification, and so on, will reduce the impact of extreme events.

57. **Climate Co-Benefits.** The World Bank's Climate Change Group has assessed climate co-benefits. The project seeks to derive climate co-benefits through (a) enhanced water security at the farm level through the rehabilitation and modernization of irrigation systems and improvement in water efficiency; (b) improved soil health through the adoption of good agricultural practices to improve soil fertility and soil nutrient management and promote soil carbon sequestration; and (c) improved adaptation to climate risks through increased farm productivity and crop diversification. The first subcomponent of the first component supports training and capacity building on CSA and Water Technology that will make the farmers more resilient to the adverse effects of the climate change, whereas the second subcomponent supports marketing, market access and storage that will reduce the harvest and post-harvest losses due to disasters. The second component supports planning, constructing and operation & maintenance of the water and other infrastructure that will ensure water security for agriculture. Finally, the last component (CERC) will strengthen the responding capacity of the project area to manage any emergency situations. Co-benefits are estimated as 95 percent of the project financing.

G. Other Safeguard Policies (if applicable)

58. Not applicable.

H. World Bank Grievance Redress

59. Communities, individuals and women who believe that they are adversely affected by a WB supported project may submit complaints to existing project-level GRMs or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, because of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the WB's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the WB's corporate GRS, please visit <http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.



VII. RESULTS FRAMEWORK AND MONITORING

Results Framework
COUNTRY: Sri Lanka
Climate Smart Irrigated Agriculture Project

Project Development Objective(s)

The Project Development Objective is to improve the productivity and climate resilience of smallholder agriculture in selected hotspot areas.

Project Development Objective Indicators

Indicator Name	DLI	Baseline	Intermediate Targets						End Target
			1	2	3	4	5	6	
Improve productivity and climate resilience of smallholder agriculture in selected hotspot areas.									
Increase in water productivity at farm level - ratio of total annual agriculture production in kg divided by evapotranspiration in m3. (Percentage)		0.00	0.00	0.00	5.00	10.00	15.00	20.00	20.00
Increase in yield for selected crops in targeted households benefiting directly from the project - Cereals/Pulses and vegetables / fruits (Percentage)		0.00	0.00	0.00	10.00	15.00	20.00	20.00	20.00



Indicator Name	DLI	Baseline	Intermediate Targets						End Target
			1	2	3	4	5	6	
Increase in catchment area that has water conservation practices adopted by targeted households for enhanced climate resilience (Percentage)		0.00	0.00	0.00	20.00	30.00	40.00	50.00	50.00
Increase in crop diversity in targeted households benefiting directly from the project. (Percentage)		0.00	0.00	0.00	20.00	20.00	20.00	20.00	25.00
Total number of project beneficiaries (Number (Thousand))		0.00	0.00	0.00	100.00	200.00	400.00	400.00	470.00
Total number of project beneficiaries – female (Number (Thousand))		0.00	0.00	0.00	30.00	60.00	124.00	150.00	150.00

Intermediate Results Indicators by Components

Indicator Name	DLI	Baseline	Intermediate Targets						End Target
			1	2	3	4	5	6	
Agriculture Production and Marketing									
Farmers reached with agriculture assets or services - Total (Number (Thousand))		0.00	0.00	0.00	40.00	60.00	80.00	80.00	80.00
Farmers reached with		0.00	0.00	0.00	12.00	18.00	24.00	24.00	24.00



Indicator Name	DLI	Baseline	Intermediate Targets						End Target
			1	2	3	4	5	6	
agriculture assets and extension services – Female (Number (Thousand))									
Farmers adopted Improved Climate Smart Technologies and Practices for increased yield (Number)	0.00	0.00	0.00	0.00	30.00	40.00	60.00	60.00	60.00
Farmers adopted improved technologies and Practices for increased yield - Female (Number (Thousand))	0.00	0.00	0.00	0.00	7.00	10.00	15.00	20.00	20.00
Farmers graduating from Farmer Business Schools, adopting the CSA practices learned and linked to market (Number (Thousand))	0.00	0.00	0.00	0.00	30.00	40.00	60.00	60.00	60.00
Farmers graduating from Farmer Business Schools, adopting the CSA practices learned and linked to market - Female (Number (Thousand))	0.00	0.00	0.00	0.00	7.00	10.00	15.00	20.00	20.00
Water for Agriculture									
Land under sustainable land use management practices. (Hectare(Ha))	0.00	0.00	0.00	0.00	0.00	50,000.00	225,000.00	225,000.00	375,000.00
Functional FOs managing irrigation and drainage structures effectively.	0.00	0.00	0.00	0.00	30.00	750.00	1,400.00	1,400.00	1,400.00



Indicator Name	DLI	Baseline	Intermediate Targets						End Target
			1	2	3	4	5	6	
(Number)									
Functional CMCs managing irrigation and drainage structures effectively (Number)		0.00	0.00	0.00	3.00	10.00	28.00	28.00	28.00
Number of hot-spot area water management plans under implementation (Number)		0.00	0.00	3.00	5.00	11.00	11.00	11.00	11.00
Project Management									
Grievances registered related to delivery of project benefits, actually addressed percentage disaggregated by Gender (Percentage)		0.00	50.00	60.00	70.00	80.00	100.00	100.00	100.00
Beneficiaries that feel project investment reflected their needs disaggregated by gender (Percentage)		0.00	0.00	0.00	40.00	60.00	80.00	80.00	80.00
Trainings delivered using agreed capacity development approach. (Percentage)		0.00	0.00	70.00	75.00	80.00	85.00	90.00	90.00
Progress reports meet World Bank quality and timely delivery requirements. (Text)		yes	yes	yes	yes	yes	yes	yes	yes
Contingent Emergency Response									
None (Yes/No)		No							No



Monitoring & Evaluation Plan: PDO Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Increase in water productivity at farm level - ratio of total annual agriculture production in kg divided by evapotranspiration in m3.	As a result of project interventions, the ratio between the productivity and evapotranspiration is planned to increase. One method for measuring ET is with a weighing lysimeter. It is measured from Year 3 onwards. It is expressed as percentage change relative to a baseline value of 0.23 kg per cubic meter.	Maha and Yala Season	Reports, Field visits and Desk Reviews	Field visits and desk review	Ministry of National Policies, Economic Affairs, Resettlement & Rehabilitation, Northern Province Development, Vocational Training & Skills Development and Youth Affairs (MNPEARRNPDVTSYDIA) and its PCC, PMU, National DPD Offices, Provincial DPD Offices and by M&E Units at each level
Increase in yield for selected crops in targeted households benefiting directly from the project - Cereals/Pulses and vegetables / fruits	Self explanatory. It is to be measured in percentage comparing increased yield with project situation and the base line situation.	Maha and Yala season	Field visits and data collection	Field visits	MNPEARRNPDVTSYAR RNPDVTSYDIA and its PCC, PMU, National DPD Offices, Provincial DPD Offices, and by M&E Units at each level
Increase in catchment area that has water conservation practices adopted by	Self explanatory. It is to be measured in percentage	Maha/Yala Season	Reports, field visits	Field visits, desk review	MNPEARRNPDVTSYAR RNPDVTSYDIA and its



targeted households for enhanced climate resilience	comparing increased catchment area with project water conservation situation and the base line situation.				PCC, PMU, National DPD Offices, Provincial DPD Offices, and by M&E Units at each level
Increase in crop diversity in targeted households benefiting directly from the project.	Project interventions will lead to change of cropping pattern from low value crops to high value crops and measures the percentage of households diversifying from traditional crops to high value crops.	Maha and Yala Season	Field visits and desk reviews	Field visits	MNPEARARNPDVTSDYAR RNPdVtSDYA and its PCC, PMU, National DPD Offices, Provincial DPD Offices, and by M&E Units at each level
Total number of project beneficiaries	This will be the sum of project beneficiaries – men and women - of all project interventions. Multiple counting is to be avoided.	Annual	Reports, field visits	Field visits and reports	MNPEARARNPDVTSDYAR RNPdVtSDYA and its PCC, PMU, National DPD Offices, Provincial DPD Offices, and by M&E Units at each level
Total number of project beneficiaries – female	This will be the sum of only female project beneficiaries of all project interventions. Multiple counting is to be avoided.	Annually	MIS Reports, Field visits and Desk Reviews	Field visits and desk review	MNPEARARNPDVTSDYAR RNPdVtSDYA, PMU, National DPD Offices, and Provincial DPD Offices along with their district and divisional units



Monitoring & Evaluation Plan: Intermediate Results Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Farmers reached with agriculture assets or services - Total	This will be the sum of all farmers – men and women - of project interventions who have been recipients of assets and services. Multiple counting is to be avoided.	Maha and Yala season	MIS Reports, Field visits and Desk Reviews	Field visits and desk review	MNPEARRNPDVTSYAR RNPDVTSYAR, PMU, National DPD Offices, and Provincial DPD Offices along with their district and divisional units
Farmers reached with agriculture assets and extension services – Female	This will be the sum of all women farmers of project interventions who have been recipients of assets and services. Multiple counting is to be avoided.	Maha / Yala	MIS Reports, Field visits and Desk Reviews	Field visits and desk review	MNPEARRNPDVTSYAR RNPDVTSYAR, PMU, National DPD Offices, and Provincial DPD Offices along with their district and divisional units
Farmers adopted Improved Climate Smart Technologies and Practices for increased yield	This will be the sum of all farmers – men and women - who have adopted improved CSTs and practices, under the project, aimed at increasing yields.	Yala / Maha	MIS Reports, Field visits and Desk Reviews	Field visits and desk review	MNPEARRNPDVTSYAR RNPDVTSYAR, PMU, National DPD Offices, and Provincial DPD Offices along with their district and divisional units
Farmers adopted improved technologies and Practices for increased yield - Female	This will be the sum of all women farmers who have adopted improved CSTs and practices, under the project, aimed at	Yala / Maha	Field visits and desk reviews	Field visits, reports, desk reviews	MNPEARRNPDVTSYAR RNPDVTSYAR, PMU, National DPD Offices, and Provincial DPD Offices along with their



	increasing yields.				district and divisional units
Farmers graduating from Farmer Business Schools, adopting the CSA practices learned and linked to market	This will be the sum of all farmers – men and women - who attended the FBSs and who have adopted improved CSTs and practices as a result of participation in the FBSs.	Annually	MIS Reports, Field visits and Desk Review	Field visits and desk review	MNPEARRNPDVTSYAR RNPDVTSYAR, PMU, National DPD Offices, and Provincial DPD Offices along with their district and divisional units.
Farmers graduating from Farmer Business Schools, adopting the CSA practices learned and linked to market - Female	This will be the sum of all women who attended the FBSs and who have adopted improved CSTs and practices as a result of participation in the FBSs.	Annually	Field Visits, desk review	Field visits, reports, deck reviews	MNPEARRNPDVTSYAR RNPDVTSYAR, PMU, National DPD Offices, and Provincial DPD Offices along with their district and divisional units
Land under sustainable land use management practices.	This indicator measures the land in hectares that have been subjected to land use management practices advocated under the project, that have been maintained for a period of one year after completion of the corresponding intervention.	Six monthly	Field visits and desk review	field visits and desk review	MNPEARRNPDVTSYAR RNPDVTSYAR, PMU, National DPD Offices, and Provincial DPD Offices along with their district and divisional units
Functional FOs managing irrigation and drainage structures effectively.	The indicator measures the total number of Farmer Organizations who are managing the irrigation and	At MTR and end of project	Field visit and desk review		MNPEARRNPDVTSYAR RNPDVTSYAR, PMU, National DPD Offices, and Provincial DPD



	drainage structures as completed by the project, so as to maintain the functionality of the structures so completed.				Offices along with their district and divisional units
Functional CMCs managing irrigation and drainage structures effectively	The indicator measures the total number of Cascade Management Committees, who are managing the irrigation and drainage structures as completed by the project, so as to maintain the functionality of the structures completed under the project.	Annually	MIS Reports, Field visits and Desk Reviews	Field visits and desk review	MNPEARRNPDVTSYAR RNPDVTSYAR, PMU, National DPD Offices, and Provincial DPD Offices along with their district and divisional units
Number of hot-spot area water management plans under implementation	Hot Spot Area Water Management Plan will include activities related to Rehabilitation, modernization, and repair of existing cascade tanks and individual village tanks; construction of recharge wells in the tank beds; drainages and flood protection infrastructure; and watershed treatment and water harvesting works.	Annually	MIS Reports, Field visits and Desk Reviews	Field visits and desk review	MNPEARRNPDVTSYAR RNPDVTSYAR, PMU, National DPD Offices, and Provincial DPD Offices along with their district and divisional units
Grievances registered related to delivery of project benefits, actually addressed percentage disaggregated by Gender	A grievance Register will be maintained at all project offices, where grievances	Quarterly	Field surveys desk reviews	Field surveys	MNPEARRNPDVTSYAR RNPDVTSYAR, PMU, National DPD Offices,



	related to the project will be recorded by name of complainant, date of receipt of complaint, nature of complaint, brief on resolution of the grievances, with date of such resolution.				and Provincial DPD Offices along with their district and divisional units
Beneficiaries that feel project investment reflected their needs disaggregated by gender	Self explanatory. It is to be a perception survey, carried out annually at 95% confidence level with interval of 5%.	Annually	Field surveys	Field surveys and desk reviews	MNPEARRNPDVTSYAR RNPDVTSYAR, PMU, National DPD Offices, and Provincial DPD Offices along with their district and divisional units
Trainings delivered using agreed capacity development approach.	This will measure the number of training events conducted under the project.	Quarterly	Field surveys and desk review	Surveys, reports and desk reviews	MNPEARRNPDVTSYAR RNPDVTSYAR, PMU, National DPD Offices, and Provincial DPD Offices along with their district and divisional units
Progress reports meet World Bank quality and timely delivery requirements.	submit quarterly, and annual Progress Reports (both for the period and cumulative) related to physical and financial statuses, with complete details on all inputs, outputs, processes, outcomes of project	Quarterly	Field surveys and desk reviews	Surveys	MNPEARRNPDVTSYAR RNPDVTSYAR, PMU, National DPD Offices, and Provincial DPD Offices along with their district and divisional units



	interventions, and including progress on indicators of the Results Framework, with issues hampering pace and quality of works, and actions taken to address the issues. The quarterly report will be submitted within one month of the completion for the preceding quarter, while Annual Report will be required to be submitted within three months of the preceding year.				
None	Targets will be decided later when emergency occurs.	NA	NA	NA	NA



ANNEX 1: DETAILED PROJECT DESCRIPTION

COUNTRY: Sri Lanka

Climate-smart Irrigated Agriculture Project

1. **Theory of change.** The project will address the key problem of the vulnerability of agriculture systems in climatic hot spot areas of the country. The drivers of this vulnerability are (a) lack of farmer access to reliable sources of irrigation water, (b) insufficient protection of agriculture land from floods, (c) low levels of diversification in agriculture production, and (d) limited adoption of climate-smart technologies. Addressing these issues will involve an approach that (a) addresses expected long-term trends in climate change including the frequency and severity of climatic events (flood and drought), (b) adopts a catchment scale approach to water management, and (c) integrates agriculture and water by working with farmers and FOs to improve the sustainable management of water and soil resources and promote the adoption of suitable on-farm water management and crop production technologies. Please refer PIP for details.

2. The PDO is to improve the productivity and climate resilience of smallholder agriculture in selected hotspot areas. This objective will be achieved through increased adaptation of climate-resilient agricultural practices and technologies, improved agricultural productivity, and enhanced access to markets in targeted smallholder farming communities. The proposed project will be implemented in 11 hot spot areas in 11 districts of six dry zone provinces that have been most affected by the recurrent monsoon failures of recent years. The hot spot areas of these districts account for a total population of 470,000 people and a project area of around 375,000 ha covered in 22 sub watersheds in 15 river basins. Out of a total of over 2,144 villages in the 11 districts selected, the project will cover up to 536 villages characterized by high climate vulnerability. Most rural households in the project districts are small and marginal farmers whose livelihood depends more than 90 percent on irrigated and rain-fed agriculture. However, poor management of surface water and lack of in situ storage of water in the project area have aggravated the impact on agriculture from the severe consecutive droughts that have hit the dry zone in the past couple of years. The hot spot areas are indicated in the project map shown in annex 7.

3. **Hotspot area.** It is a geographic extent (about 25,000 ha on average) where farmers and farming livelihoods are highly exposed and vulnerable to increasing climatic variability. Hotspot areas were identified through a rigorous analysis of empirical evidence by the DAD of the MAREALDIFAR, the WFP and the IWMI, using primary and secondary data on, among others, (a) drought impacts, including crop losses and expenditures on drinking water and relief supplies; (b) current climate vulnerability based on income poverty, housing quality, source of drinking water, and participation in safety net programs; and (c) future climate vulnerability up to the year 2030 based on an index of 42 indicators measuring exposure, sensitivity, and adaptive capacity. The administrative regions identified as vulnerable by the data analysis were placed on a river basin map and contiguous areas (sub-watersheds) within these river basins, with a high concentration of vulnerability, were identified as hot spots. All areas are paddy-dominant but with nascent diversification (about 10 percent of area), all of which will be the focus of CSA techniques and practices, which, if successful, should be more easily transferred to adjoining dry zone areas given their similarity in terms of topography, agricultural development, and patterns of agrarian livelihoods.

4. **Hot spot area development model.** Given the centrality of tanks in the agrarian livelihoods of the dry zone of Sri Lanka, their current levels of deterioration, and the increasing vulnerability of these areas



to both droughts and floods in quick succession with consequent impacts on agricultural production and incomes, the rehabilitation of tank-based irrigated agricultural systems is the key to improving the resilience of these areas and the agrarian communities that depend on them. Resilience being ‘the ability of a system to bounce back or return to normal functioning after adversity’, the hot spot area development model aims to enhance the resilience of these areas and those who depend on them for their livelihoods. Resilience will be built through stable and rising incomes of agrarian families living in these hot spot areas despite increasing climatic variability. The expected results will be achieved by (a) flexible and adaptive management of existing and improved irrigation water storage and delivery structures to make irrigation more reliable in the face of rising climatic variability (including more frequent episodes of high intensity rainfall and flooding and/or drought); (b) better agricultural inputs, techniques, and practices that will help farmers maximize water use efficiency given rising climatic variability—and reduce crop harvest losses; and (c) better access to markets, through commercialized agriculture with stronger links to agri-enterprises and upgraded infrastructure for agricultural trade to stabilize and increase incomes from agricultural livelihoods.

5. **Component 1: Agriculture Production and Marketing (US\$42 million).** The objective of this component is to enhance climate resilience through *higher and more stable on-farm productivity growth* by supporting the adoption of CSA practices, diversification into more climate-resilient and higher-value crops, efficient and effective on-farm water management, small-scale market infrastructure investments, and the establishment of private sector links beyond the farm gate. Component 1 will spur diversification away from paddy and into cash crops, increase and stabilize crop yields (through CSA techniques and practices), and thus increase and stabilize farmers’ incomes.

6. **Subcomponent 1.1: Climate Smart Agriculture and Water Technology (US\$21 million).** This subcomponent will develop the project approach to promote CSA, covering *production practices* (soil, water, and crop choice and management, and so on) and *postharvest management* (storage, value addition/processing, packaging, and so on), and thus enable farmers to master the practices and management skills required for sustainable production, postharvest processing, and improved quality of produce (taking into account food safety standards) and increase producers’ resilience to short- to medium-term climate variability projected for Sri Lanka. It aims to give farmers the practical skills required for informed decision making based on accurate problem analysis in their local contexts. Following a review of best practice of science-based farmer-field demonstrations in the country and region, and indigenous technical knowledge (ITK) from dry zone areas of Sri Lanka, this subcomponent will identify proven, locally adapted climate-resilient practices and technologies¹.

7. All promising technologies and practices identified at the national level through a desk review of work by research institutes, agricultural universities, and other projects (especially demonstrations on farmers’ fields) will be followed up by field visits wherever possible to assess technical impacts and

¹ The term ‘climate-resilient practices and technologies’ is used here to mean all production and postharvest activities that contribute to at least two of the following: adaptation, mitigation, and/or productivity. The project will focus on disseminating practices and technologies that have already been proven in Sri Lanka or in similar agro-climate environments and agricultural production systems. These could include, for example, high(er) efficiency irrigation, alternate wetting and drying, direct seeding, enhanced soil fertility management, seasonally adapted planting times, climate-resilient foundation seeds, and improved postharvest processing, including waste management. Not all practices or technologies are climate-resilient in all contexts or for all crops; as such, a detailed assessment of the climate-resilient practices and technologies relevant in each village will be undertaken that builds on the findings of the 2015 ‘Climate-smart agriculture in Sri Lanka’ country profile prepared by the World Bank and the International Center for Tropical Agriculture.



economic viability at first hand. Regional studies and exposure trips to best practice areas (for example, in India) will also be undertaken. Promising practices will be short-listed for community-level demonstrations. A preliminary assessment of such technologies includes on-farm water management practices and agronomic practices. Fruits and vegetables play an essential role in nutritious diets and are key to addressing health and nutritional challenges. Increasing productivity to meet growing demand is challenged by the impacts of climate change and competition for essential natural resources. Ensuring the sustainability of fruit and vegetable supply cannot be achieved without the implementation of climate-smart adaptation and mitigation interventions.

8. Tried and tested climate-resilient practices and technologies will then be incorporated into agricultural extension materials and curricula of FBSs and delivered through training programs and integrated extension services to FOs and PGs for field and horticultural crops, including pulses, oilseeds, maize, banana, and vegetables. FBS is a participatory and interactive onsite learning approach that emphasizes problem solving and discovery-based learning, and it aims to build farmers' capacity to analyze their production systems, identify problems, test possible solutions, and eventually encourage participants to adopt the technologies and practices most suitable to their farming systems. FBS activities are set up in the fields of selected 'lead' farmers and are operationalized at the village level under the coordination of the CMCs and with the technical backstopping of extension staff.

9. The key activities to be financed include: (a) TA to carry out a detailed assessment (financial analysis, technical feasibility, sustainability analysis including climate impacts, and gender analysis) of the climate-resilient practices and technologies relevant to each mini-watershed; (b) TA to develop and deliver commodity-specific training modules on climate-resilient practices and technologies to extension agents of the DAD and the PID, including on the requirements for adoption (for example, finance, water availability, agro-climatic areas, and soil types), benefits in terms of yields, as well as increased resilience (for example, enhanced soil health, protection of the productive natural resources base, and water conservation), and implementation modalities for each practice and/or technology; (c) delivery of agronomic extension services to FOs and PGs through effective extension approaches (for example, field demonstrations and training events) including the use of proven ICTs to facilitate the adoption of climate-resilient practices and technologies; and (d) capacity development of PGs and support to investments associated with technology transfer to PGs on a pilot basis. A variety of media technologies will be used to facilitate access to advisory services outside regular visits from extension services, such as mobile phones, radio, and web-based platforms, drawing on national, regional, and global experience.

10. **Subcomponent 1.2: Marketing (US\$21 million).** This subcomponent aims to consolidate the links between PGs and the agriculture commodity markets in the hotspot areas by: (a) deepening the understanding of agriculture value chains and markets in the targeted areas; (b) developing a multi-stakeholder dialogue platform bringing together the producer base, extension, and market actors; and (c) financing the upgrade/rehabilitation of critical market infrastructure for common storage, processing, and marketing. Since crop production within the target locations is highly sensitive to climate variabilities and falls short of expected yields due to low connectivity and limited access to markets for both inputs and outputs, the proposed potential adaptation activities planned to help address the above vulnerabilities include investments in: (a) storages to accommodate early harvests made based on weather forecasts; and (b) knowledge, skills, and attitudes among smallholders to increase their production and productivity in tandem with facilitating market access.



11. For better business links between producers and buyers that will facilitate the profitable sale of the produce on the end market, depending on many factors (for example, rural infrastructure, access to inputs, collective action of producers, and postharvest business management and marketing skills), the project will address: (a) access to assets for postharvest management; (b) behavioral change toward stronger collective action for leveraging efficiency gains in marketing; and (c) the development of knowledge about improved practices (for example, business management and postharvest management).

12. The project is designed to coordinate these activities at the divisional level by the ASCs. The ASCs are an important element in the link between the GoSL and the farmers in service provision (access to fertilizer subsidy, banking, land ownership issues, irrigation, and agricultural extension) and data collection. The ASC has the following characteristics: (a) the ASC has established office building with several offices, furniture, computers, and printers; (b) the ASC supports farmers within an average reach area of 20–25 km; (c) the ASC is staffed by several Agricultural Research Productivity Assistants (ARPAs), who serve around 500 farmer families each, and an Agriculture Instructor (AI) who provides agricultural extension knowledge; (d) the ARPAs and the AIs have motor bikes to travel around to support the farmers; (e) the data collected in the field by ARPAs and the AI is entered into computers and hardcopy reports printed and manually sent upward for further aggregation; and (f) a typical ASC has no reliable connectivity, which entails that a computerized MIS cannot be used currently. However, given the potential value that this institution can provide to the agricultural sector, the project will modernize this institution. This modernization could be done by providing (a) reliable high-speed digital connectivity; (b) ARPAs and AIs with mobile tablets that can be used for e-agriculture extension and data collection; (c) real-time access to a computerized MIS and information, including weather forecasting; (d) appropriate capacity building to ASC staff to use the ICT tools (MIS, mobile devices, apps, and so on) effectively; (e) working space for FOs and PGs; and (f) storage facilities.

13. Finance will also be provided to construct/rehabilitate infrastructure for agri-commodity storage, processing, and marketing, including the construction and/or upgrading of CSCs and wholesale and periodic rural markets. These ‘productive’ demand-driven investments in CSCs (small-scale aggregation facilities owned, managed, and operated by PGs) will be based on a clear and convincing business case. The exact locations for these market infrastructure investments will be based on a tailored Infrastructure Inventory and Needs Assessment (to ascertain a clear need or public good requirement, which is not being met by other infrastructure projects currently under implementation) and will consider the rural roads investments carried out under Component 1. All investments will be screened for potential adverse effects on the environment and public health and will be carried out by relevant departments.

14. **Component 2: Water for Agriculture (US\$92 million).** The objective of this component is to facilitate (a) *planning* for water and other infrastructure necessary to support climate-resilient irrigated agriculture, (b) *construction* of the planned infrastructure, and (c) *O&M* of this infrastructure, by local government and the local community, to ensure adequate water storage and delivery and thus ensure that agricultural production in the hot spot area (especially on small and marginal farms) is more resilient to the impacts of increased climatic variability. The project will be rolled out in three administrative districts (Anuradhapura, Kurunegala, and Kilinochchi) covering three provinces in the first year. The remaining eight districts will be added in second and third year, based on readiness and completion of necessary preparation activities.

15. **Subcomponent 2.1: Rehabilitation of Irrigation Systems (US\$86 million).** This subcomponent will support: (a) river and drainage conveyance development; (b) restoration, rehabilitation, modernization,



repair, and O&M of cascade tanks and individual villages tanks, catchment clearance and desilting of supply channels of tanks, lining of water distribution channels in the tank commands, and construction of recharge wells in tank beds and agro-wells at the end of field and distribution canals; (c) small water impounding structures in the upper catchment of the tanks to provide supplementary irrigation for rain-fed crops; and (d) water treatment and water harvesting.

16. This subcomponent will support a participatory, inclusive, interactive, and bottom-up development planning process involving irrigated and rain-fed agriculture stakeholders to prepare HSAWMPs at three levels: hot spots (about 25,000 ha); mini-watersheds within the hot spot areas (about 4,000 ha), including tank cascade systems, stand-alone irrigation systems, and rain-fed agriculture systems; and local administrative levels (DS Divisions and GN Divisions). Developing the plans will include: (a) hiring the services of facilitation teams for mobilizing (awareness-raising) and training of key stakeholders, including the responsible government institutions and local communities, in participatory development planning and climate-smart water management; (b) TA to support the hydrological modelling, the use of hydro-met systems, and the identification of locally relevant adaptive water infrastructure and adaptive management strategies; and (c) facilitation of a series of participatory planning meetings to solicit suggestions and insights based on ITK and to agree on a range of key planning issues, including the development objectives for the hot spot areas, climate and weather-related risks to these development objectives, and the infrastructure investments and management strategies required to improve resilience to climate-related risks and thus achieve the agreed development objectives.

17. The plans will be the basis for detailed design work, including: (a) the assessment, design, and implementation of river development for flood protection; (b) the assessment of the condition and functioning of existing cascade and individual village tanks (including the head works, foreshore, spillway, sluice gates, and water distribution channels in the tank command) and their catchments; (c) condition of the inflow channels to the cascade tanks and individual village tanks; (d) TA for a range of planned activities including engineering surveys for computing the storage-elevation curves, estimating the infiltration rates of tank bed soils, and assessing the current storage capacities and storage capacity enhancement requirements of the existing tanks, given the likely drought and flood scenarios; (e) the preparation of detailed designs and cost estimates for the works relating to storage capacity enhancement of tanks, bank stabilization, jungle clearance, desilting of supply channels, and construction of recharge wells, the review and QA of civil works, and the promotion of appropriate species for biomass production; (f) the physical work of restoration, rehabilitation, modernization, and repair of existing cascade tanks and individual village tanks and construction of small water impounding structures in the upper catchments and construction of recharge wells in the tank beds; and (g) the implementation of identified watershed management interventions (including the provision of incentives and TA to private landowners to promote appropriate biomass production on private and public lands within hot spot areas).

18. **Subcomponent 2.2: Operation and Maintenance of Irrigation Systems (US\$6 million).** The objective of this subcomponent is to improve the efficiency and productivity of the use of water harnessed by the cascade and individual tanks and water harvesting structures in the command areas and uplands to manage the demand for water for irrigated agriculture in the hotspots, and to enhance the returns per unit volume of water and farm incomes.

19. Watershed management is an integral component of cascade-based tanks, and CMCs will be formed comprising key stakeholder agencies and users and supporting technical and administrative staff.



CMCs will be the basic institution and primary entry point for watershed-based water management initiatives.

20. This subcomponent will finance mobilization and empowerment of small and marginal producers on water management to: (a) establish CMCs for each of the cascades of minor irrigation tanks within the watershed-based boundary of the hot spot areas; (b) strengthen existing FOs that have been set up to manage each tank, to carry out additional activities planned under Subcomponent 2.3; (c) organize meetings and information, education, and communication events to create awareness among the farmers in the hot spots on the importance of FOs and CMCs in promoting water management, their key roles, and the specific functions they can play in water management; (d) organize training programs to build the capacities of the FOs and CMCs so as to perform various functions, including technical, organizational, managerial, and financial; and (e) provide periodic monitoring of the performance of these organizations and evaluation of the impact of capacity-building programs undertaken for them.

21. **Component 3: Project Management (US\$6 million).** The objective of this component is to ensure the quality of overall project management, while ensuring smooth coordination of activity implementation by various agencies and strategic partners at all levels. This component will finance: (a) the operating costs of the PMU and DPD offices and of different project executing agencies; (b) the M&E and social auditing of project activities; (c) communications campaigns to inform all relevant GoSL institutions, community members and value chain actors in the hot spots, and other potential stakeholders about the scope, objectives, activities, and rules of the project through local workshops and mass media outlets; (d) activities for ensuring proper monitoring of environmental and social safeguard policies; (e) activities for completing the baseline study and conducting impact assessments of project activities; (f) the hiring of staff, procurement of goods and consultant services, workshops, and training; and (g) activities for supporting an independent value-for-money monitoring and geotagging the assets created.

22. This component will also finance activities related to routine M&E functions (such as data collection, analysis, and reporting) and the baseline, mid-point, and end-of-project impact evaluations. An ICT-based platform will include the needs of other components and overall project management by serving four main functions: (a) access to information including generation and dissemination of cutting-edge knowledge on a range of issues related to climate-resilient agriculture, (b) multidirectional flow of information, (c) market links, and (d) M&E. The platform will be used as an instrument for knowledge management and help communities to: (a) have better access to information, knowledge, and technical advice to improve farming practices; (b) provide feedback on the performance promoted by the project; and (c) find and establish marketing links with input suppliers and output purchasers.

23. **Component 4: Contingent Emergency Response (US\$0 million).** This contingent emergency response component will allow for rapid reallocation of project proceeds in the event of a natural or man-made disaster or crisis that has caused or is likely to imminently cause a major adverse economic and/or social impact. To trigger this component, the GoSL would need to declare an emergency or a state of a disaster or provide a statement of fact justifying the request for the activation of the use of emergency funding. Examples of such crises might include drought, severe weather events, and pests and diseases ravaging crops. No funds will be allocated to this subcomponent. However, in case of emergency, funds can be reallocated to this subcomponent following a joint decision by the GoSL and the World Bank. This subcomponent will finance expenses on a positive list of goods, works, services, and emergency operation costs required for emergency recovery as detailed in the PIP.



ANNEX 2: IMPLEMENTATION ARRANGEMENTS

COUNTRY: Sri Lanka Climate-smart Irrigated Agriculture Project

Institutional Arrangements

1. **Institutional and implementation approach.** The key design features incorporated in the institutional and implementation model include a *multi-stakeholder approach* - different stakeholders involved in the field of climate-resilient irrigation and agriculture are expected to contribute to the project implementation from national to subnational levels; a *coordinated approach* - stakeholders are expected to share knowledge and resources in a collaborative manner at each level; *citizen engagement* - local smallholder farmers, medium-size agribusiness owners, common interest groups, producer organizations, individual entrepreneurs, and their customers will be involved in the planning and implementation of project activities, along with GoSL counterparts, NGOs, academia, and the private sector; *consistency with the National Poverty Alleviation Programme* - since the project will also work with the village level institutions at the GND level; *use of existing GoSL staff* - except a few of the full-time key professionals to be recruited from the open market, the rest of the staff will be from existing GoSL cadres and work on a part-time basis at both national and provincial levels; and *gender equality* - the project design and approach will take into account the gender dimension and ensure that the project provides equal opportunities for women to participate in the project cycle.

2. **Institutional arrangements:** The project is integrated in the GoSL administration, and the implementation is designed to capitalize on existing GoSL agencies at the national, provincial, district, divisional, and GND levels. A PMU will be established under the MAREALDIFAR, whereas DPD offices will be established under the ID and MIHAPCLGS. At the provincial level, there will be provincial DPD offices set up in each of the participating provinces to implement the project. In addition, a district unit of the DPD office will be established at the district level to coordinate all agencies operating at that level. However, only five district offices will be set up at the districts of Puttalam, Batticaloa, Mullaitivu, Polonnaruwa, and Ampara where no provincial DPD offices are established, and those will be set up at the office of the ACAD. The provincial DPD offices set up at six districts, that is, Kilinochchi, Kurunegala, Anuradhapura, Trincomalee, Hambantota, and Moneragala, will cover the district-level activities too.

3. There will be a PAT set up at the District Secretariat, which will be coordinated by the District Planning Director. The PAT is an independent body and will report to the district unit of the provincial DPD office. The staffing of the PAT is given in the PIP. In addition, at the district level, there will be an Advisory Committee headed by the District Secretary. The Divisional Secretaries of the participating divisions and district and divisional-level heads of the GoSL agencies, representatives of chamber of commerce, associations of FO/producer organizations, and NGOs will participate in the Advisory Committee. The Advisory Committee will guide the project implementers at the district level to implement the Climate Smart Irrigated Agriculture Project (CSIAP) effectively.

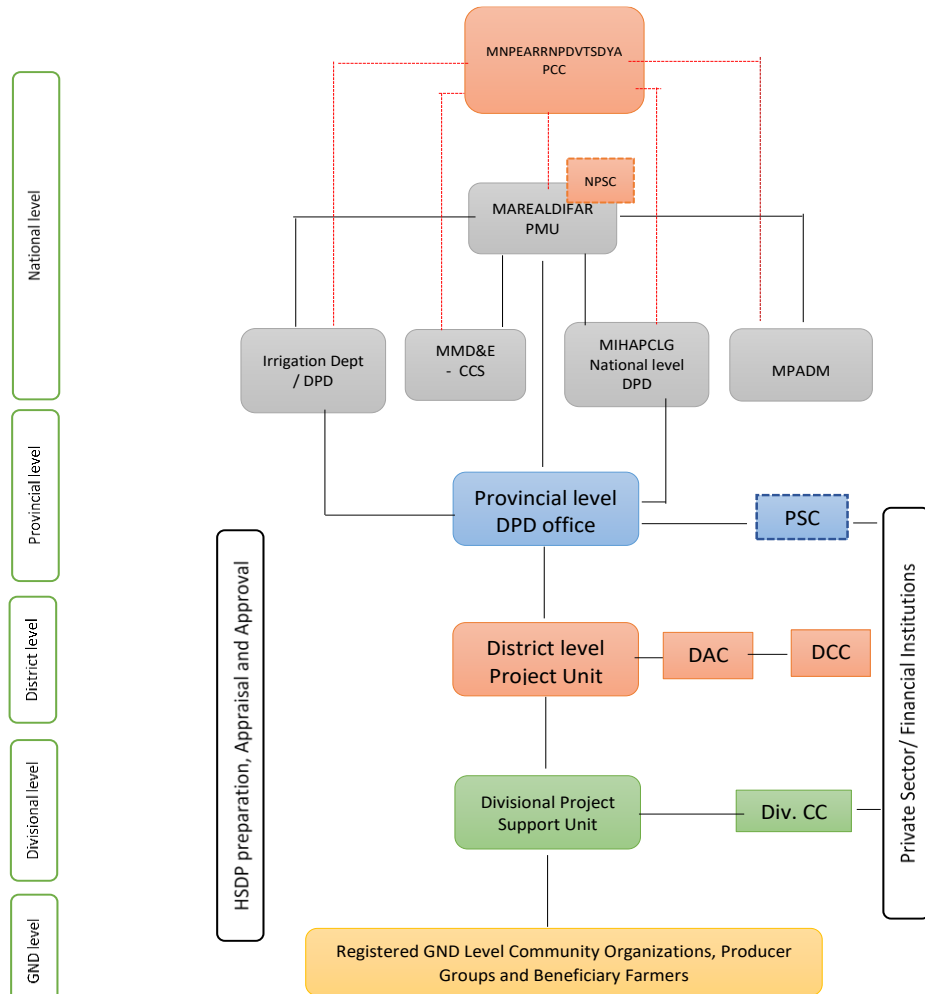
4. At the divisional level, there will be a divisional unit of the DPD office set up at the ASC, and it will be headed by the Divisional Officer of the ASC. The divisional unit will function as a supporting unit to the provincial DPD office and work closely with the district unit to implement the project effectively. The



community-based organizations such as FOs, PGs, community centers, and GSPCs operating in the GND level are the institutions that will involve actively in the project with the beneficiaries at community level.

5. The day-to-day management and operation of the project are the responsibility of the PMU, headed by a PD and assisted by a Water Resources Development Specialist appointed by the ID. Given the transformative nature of the project, institutional coordination across the relevant sectors is emerging as a critical task for the PMU in developing an effective project implementation mechanism to achieve convergence with other programs. The institutional arrangement is given in Figure 2.1:

Figure 2.1. Overall Project Institutional Arrangement for Implementation



MNPEARRNPVTSDYA: Ministry of National Policies, Economic Affairs, Resettlement & Rehabilitation, Northern Province Development, Vocational Training & Skills Development and Youth Affairs	PCC: Project Coordinating Committee
MAREALDIF: Ministry of Agriculture, Rural Economic Affairs, Livestock Development, Irrigation and Fisheries & Aquatic Resources	NPSC: National Project Steering Committee
MIHAPCLG: Ministry of Internal & Home Affairs, Provincial Councils and Local Government	PSC: Provincial Steering Committee
MPADM: Ministry of Public Administration and Disaster Management	DAC
MMDE CCS: Ministry of Mahaweli Development & Environment – Climate Change Secretariat	DCC: District Coordinating Committee
PMU: Project Management Unit	Div CC: Divisional Coordinating Committee
DPD: Deputy Project Director	GND: Grama Niladhari Division

Abbreviations and Acronyms



6. **Implementation arrangements.** The overall project implementation is the responsibility of the MAREALDIFAR. Since the institutional capacity of the MAREALDIFAR is limited and special skills are required to implement the complex project activities, the project will draw expertise from the ID, DoA, DAD, and ID and acquire outside expertise, including consulting services. The project will coordinate across departments, agencies, and strategic partners involved in the implementation of project activities. The overall project oversight is the responsibility of the NPSC, established in the MNPEARRNPVTSYDIA and chaired by its Secretary. The main responsibility of the NPSC is to provide strategic guidance for the implementation of the project and to act as the interface between the central and provincial institutions. The NPSC will also approve the annual work program and budget for the project, endorse the working arrangements with strategic partners, and be briefed by the World Bank (and the PD) on the outcomes of implementation support and review missions carried out with the World Bank team at least biannually. The PMU will have about 40 percent of its staff released from the MAREALDIFAR/ID and another 20 percent with shared responsibilities from the PMU of the ASMP implemented by the MAREALDIFAR. This innovative arrangement will ensure smooth implementation and postimplementation arrangements of the project activities.

7. The PMU is responsible for ensuring that (a) all project activities are planned, financed, and implemented according to the project annual work program and budget; (b) project implementation is in line with the PIP; (c) project procurement and FM activities are carried out on time according to the World Bank's Procurement Regulations, the project fiduciary manuals of the PIP, and the PP; and (d) social and environmental safeguards applicable to the project are fully complied with. The PMU is also responsible for monitoring project activities, preparing the quarterly and annual project progress reports, and ensuring that all reports (including financial reports) are submitted to the World Bank on time. The framework with institutions, key roles, and responsibilities at various levels is given in the PIP.

8. The main government departments involved in the preparation of the HSAWMP are Irrigation Department, Department of Agrarian Development and Agriculture Department of the central government and Irrigation Department, Agriculture Department, Road Department/Authority and Local Government Department of the provincial councils. The provincial DPD office, under the direction of the Chief Secretary, will lead the preparation of the HSAWMP with the assistance of Deputy Chief Secretary (Planning) and all the departments listed above. The relevant departments will prepare subproject proposals and cost estimates, execute the works including procurement, submit payment vouchers to provincial DPD office, and carry out O&M of the subprojects. Provincial DPD office will scrutinize the vouchers and release cheques to the departments.

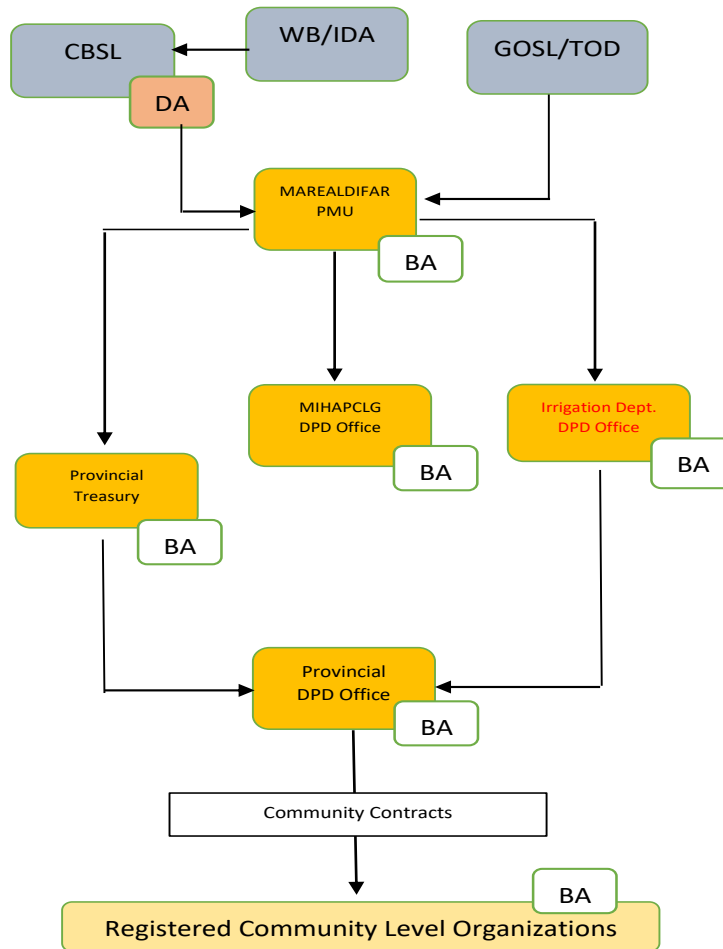
FM and Fund Flow Arrangements

9. Project preparation activities have been undertaken by the Department of National Planning. A Project Preparation Advance facility with US\$200,000, which will be charged to the Credit later, is also agreed upon. Regarding implementation arrangements, multiple implementing agencies are involved. A PMU, which will be responsible for managing and implementing the project, will be established under the MAREALDIFAR. It will also be in charge for the overall Credit fund handling and overall FM arrangements of the project. Subprojects will be executed by the functional units/offices of the central/provincial level. A detailed fund flow arrangement is depicted in Figure 2.2:



Figure 2.2. Fund Flow Arrangements

Fund Flow Arrangements



DA - Designated Accounts

BA - Bank Accounts

10. The overall FM responsibilities of the PMU office at the MAREALDIFAR include (a) honoring all financial covenants in the project Legal Agreement; (b) obtaining funds from the World Bank Credit and managing/transferring such funds in an efficient, effective, and transparent manner; (c) furnishing consolidated financial reports and consolidated audited financial statements to World Bank on time; and (d) carrying out overall management/coordination of FM functions, including incurring eligible expenditures/accounting functions, managing the internal and external audits, and providing audit follow-up of the project. Each DPD office will be required to periodically submit a statement of expenditures/financial reports, which are necessary for the consolidation of IUFR and withdrawal of funds from IDA/CBSL and any other requests relating to FM made by the World Bank’s task team. The PMU will consolidate these reports and take necessary action to withdraw funds.



11. The IDA Transitional Credit procedures will be used to finance eligible expenditures necessary to meet the development objectives of the project with due attention to considerations in accordance with the provisions of the Financing Agreement. If the World Bank determines that the Credit has been used to finance any ineligible expenditures, the amount used for such expenditures shall be refunded to the World Bank by the GoSL. All fund transfers will be between bank accounts, and no cash transfers will take place.

12. **Financial management (FM) staffing.** The FM unit of the PMU will be headed by an Financial Management Specialist. In addition, the PMU and DPD offices will have qualified and experienced Accountants who will preferably have experience in FM under the World Bank or any other donor-funded projects. The FMS will provide guidance and directions to ensure that appropriate FM arrangements are in place.

13. The FM capacity assessments were undertaken in the MAREALDIFAR, ID, and MIHAPCLGS and also in the provincial-level main departments such as the DoA, DI, and Department of Road Development, on a sample basis. The overall FM arrangements were found to be working satisfactorily within the existing GoSL systems with no significant issues observed. At present, FMS capacity is found limited in almost all the assessed entities, and they are working with capacity constraints. Project units may have to recruit experienced and dedicated FMS who will be responsible to handle the FM arrangements of the project once the level of activities handled at each entity is finalized

14. All district offices of the MAREALDIFAR and ID and provincial DPD offices at the provincial level will receive project funds for relevant subprojects from the PD or respective DPD offices at the national level for implementation. All eligible expenditures including payments for the claims relevant to subprojects are done by the DPD offices, and the DPDs will report to the PMU periodically on the expenditure incurred on behalf of the PMU. An Accountant will be responsible for the FM functions at each provincial DPD office. Expenditure incurred at this level will be accounted by the respective entities accordingly.

15. **Budgeting.** The line ministries will be responsible to ensure all forecasts for the required resources (budgetary provisions) of the project activities for each financial year are forwarded for the inclusion into the national budget to the PMU under the MAREALDIFAR. The DPD offices under the MIHAPCLGS and ID will also ensure that all PCs where the project is implemented have prepared their budgets based on their respective annual work plans of the project for each fiscal year. The PMU should also ensure that all these forecasts of fund requirements are estimated under the relevant financing code and provided to the Ministry of Finance/National Budget Department for inclusion in the National Budget. At the same time, the PMU will prepare its detailed annual work plan and estimates in line with the detailed project budget. The PMU can implement the activities under the project, incur expenditure, and record expenditure using the budgetary provision obtained for the project under the respective foreign/local financing codes.

16. **Fund flow and disbursement arrangements.** One DA will be opened by the MAREALDIFAR in the name of the Deputy Secretary to the Treasury at the CBSL and will be operated and managed by the PMU through Treasury Operations Department (TOD). The PMU will also open and operate a segregated rupee account to receive funds from the DA and release funds to the DPD offices at the ID and MIHAPCLGS, which will release funds to provincial DPD offices and districts. Each DPD offices at the ID, MIHAPCLGS, and all six PCs will also open a local currency bank account in any of the state commercial banks. The PMU will maintain a separate set of books of accounts and reporting for its transactions with IDA and the CBSL.



Disbursement will be IUF based on six months advance requirement. The PMU will be required to submit quarterly IUFs to the World Bank within 45 days of the end of each quarter. The World Bank will advance funds to the DA in adequate amounts to meet forecasted expenditures for the next six months, as reflected in the respective IUF. The IUF will provide information on the expenditure made in the reporting quarter and the forecast of expenditures for the next two quarters. Quarterly disbursements will be made based on these IUFs, providing funds for the next six months after adjustment for past disbursements. The IUFs will also include a list of payments against contracts that are subject to the World Bank prior review/approval. Replenishments to the DA will be based on the IUFs approved by the World Bank. Withdrawal applications will be prepared by the PMU and submitted to the World Bank for further funds from the World Bank. The PMU will also submit a separate request for the replenishment of the rupee account through DA funds through the General Treasury. The specific format of the IUFs, designed in accordance with the guidelines issued by the World Bank, will be attached to the Disbursement Letter. Exchange losses arising due to the transfer from the DA to the Sri Lanka Rupee account will not be considered as an eligible expenditure and will not be absorbed under the Credit.

17. Each DPD office will make payments for eligible expenditures and release of imprest advances and track the inflow and outflow of project funds. The PMU and DPD offices can have the option of requesting a direct payment to suppliers by (a) the CBSL, using the proceeds in the DA or (b) the World Bank against the credit for large payments. However, they are expected to send such direct payment claims with the necessary certification of expenditure either to the CBSL or IDA as appropriate through the PMU. The DPD offices will also receive an imprest advance from the PMU and incur expenditure in hot spot regional developments (subprojects implementation) and for executing the activities included in business plans submitted by the PG or individual entrepreneurs directly through the relevant departments.

18. **Retroactive financing.** Retroactive financing will be available for eligible expenditures incurred under all project components, up to an aggregate amount not exceeding US\$5 million provided by the IDA, from July 01, 2018 until the Credit FA signing date.

19. **Accounting policies and procedures.** All project funds, will be routed through the PMU, which will be responsible for funding expenditures and accounting and reporting on the financial and physical progress of the project. The PMU will also keep separate accounting records for the components and manage them by category and ensure that acceptable FM arrangements are maintained for the funds handled by it. The accounting and FMS of the PMU and DPD offices will coordinate closely with technical staff where a systematic verification of invoices is needed and issue recommendations to be carried out before payment at the provincial DPD offices. The project's accounting practices will be governed by the GoSL's Financial Regulations.

20. **Accounting system.** A sound manual accounting system will be established first and then a computerized accounting system may need to be developed to be used by the PMU of the project. The system will need to facilitate the generation of expenditure reports by component/subcomponent, category, and budget classification thus enabling comparison of actuals with the budget and ensure an effective monitoring of expenditure. A separate chart of accounts will be introduced for the project.

21. **Internal audit.** The project will appoint an internal auditor to carry out internal audits of the project. In addition, the Internal Audit Unit of the respective line ministries and the PCs under which the DPD offices operate will be required to carry out internal audit functions of the project activities. The



Internal Auditors will assess whether the funds have been disbursed on time and used effectively and efficiently for the intended purposes.

22. **External audit and audit reports.** The PMU will prepare consolidated project annual financial statements for auditing by the Auditor General of Sri Lanka. The audit arrangements are agreed with the Auditor General’s Department. The audit will cover all project activities carried out by the project entities and all payments made from the various project accounts. The audit will be conducted annually. The audit report will be submitted to the World Bank within six months after the end of the financial year. The PMU at the MAREALDIFAR is responsible to monitor and ensure the timely submission of the annual audited financial statements to the World Bank. The audit reports will be monitored in the World Bank’s Audit Reports Compliance System in PRIMA. According to the World Bank’s Access to Information Policy, the audit reports received by the World Bank will be disclosed on the World Bank’s external website for public access. There are no overdue audit reports for the MAREALDIFAR under World Bank-financed projects.

Table 2.1. Reporting Criteria

Type of Reports	PMU
Audited project financial statements	On or before June 30 to World Bank for each fiscal year

23. **FM risk and implementation support plan.** The FM risk is assessed as Moderate. Consistent with a risk-based approach to FM supervision, FM supervision activities will consist of desk reviews of internal and external audit reports, including verification of the adequacy of the resolution of major audit observations and reviewing of quarterly IUFs, supplemented by dialogue with the PMU/DPD offices as needed, especially during the initial years of project implementation. The FM supervision mission will be conducted at least once in every six months. Other supervision tools and resources, such as transaction reviews and site visits, will be used to periodically monitor the adequacy of the FM system. In addition to the regular FM implementation support, the World Bank team will provide training, capacity building, and knowledge sharing for the FMS and the internal audit staff.

24. **Disbursement categories.** IDA will finance eligible expenditures, for goods, works, non-consulting services, consulting services, training and workshops, and incremental operating costs of the project, including taxes as shown in Table 2.2. The GoSL will cover the salaries and salary allowances of government officials working for the project on deputation or an assignment basis based on the Management Services Circular No. 01/2016 and amendments issued through the letter MSD No. DMS/CIR/01/2016(1).

Table 2.2. Disbursements

Category	Amount of the Credit Allocated (expressed in USD)	Percentage of Expenditures to be Financed (inclusive of Taxes)
(1) Goods, works, non-consulting services, consulting services, Training and Incremental Operating Costs for the Project	124,487,500	100%



(2) Emergency Expenditures for the CER Part	0	100%
(3) Refund of Preparation Advance	200,000	Amount payable pursuant to Section 2.07 (a) of the General Conditions
(4) Front-end Fee	312,500	Amount payable pursuant to Section 2.03 of this Agreement in accordance with Section 3.08 (b) of the General Conditions
(5) Interest Rate Cap or Interest Rate Collar premium	0	Amount due pursuant to Section 4.06 (c) of the General Conditions
TOTAL AMOUNT	125,000,000	

25. **Incremental operating costs.** Incremental operating costs include expenditures of the project, such as reasonable costs of goods and services required for the day-to-day implementation of the project, including maintenance of vehicles and equipment, fuel, office supplies, utilities, consumables, communication, office rental and maintenance, bank charges, advertising expenses, travel of staff (including per diems and accommodation), and salaries of selected contracted support staff, but excluding salaries and salary top-ups of civil servants of the GoSL.

Procurement

26. **Country procurement environment.** Public procurement in Sri Lanka is governed by the National Procurement Guidelines of 2006 (as amended), supplemented by a procurement manual and standard bidding documents (SBDs). Procurement for the project will be carried out in accordance with the World Bank’s Procurement Regulations. The project will be subject to the World Bank’s Anticorruption Guidelines, dated July 1, 2016. According to the requirement of the Procurement Regulations and given that the project does not involve high-value and complex contracts, a short form of PPSD has been prepared by the GoSL. The PPSD describes the overall project operational context, market situations, implementing agencies’ capacities, and possible procurement risks. The PP sets out the selection methods to be followed by the borrower during project implementation in the procurement of goods, works, and non-consulting and consulting services financed by the World Bank. The PP will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

27. The guidelines, manuals, and SBDs constitute the comprehensive public procurement regulatory framework. They include a menu of procurement methods, specify the contents of bidding documents and evaluation criteria, and adequately respond to the procurement needs of different entities. The guidelines apply to all national procuring entities and provincial entities using national budget funds. Procurement is decentralized to entities both at the central and provincial levels.

28. **Capacity assessment.** The procurement risk is assessed as High. A preliminary assessment of the MNPEARRNPVTSYDA, MAREALDIFAR, ID, and six PCs, which still have to establish the respective PMU



and DPD offices, indicates that some of the PCs have limited experience in managing World Bank–funded projects. The respective Accountants appointed in each ministry and PC are responsible for procurement and are assisted by other accounting cadre officials. They are usually familiar with the domestic procurement guidelines and regulations. A detailed procurement assessment will be carried out as soon as the PMU and DPD offices are established and adequate staff have been put in place. The procurement risk rating will be reassessed during implementation.

29. The procurement capacity and arrangements were also reviewed at the PC of the Northern province, as one of five participating provinces that will establish DPD offices. They are familiar with the World Bank’s procurement guidelines and have introduced the World Bank’s sample PP within the Northern PC for better monitoring the procurement process, through the ASMP. The DPD office is yet to be established. It will be housed with the Deputy Chief Secretary [DCS] (Planning) under the PC. Similar arrangements will be in place in the other participating provinces. The procurement capacity of the DPD offices will be assessed as soon as they have been established along with the formulation of adequate capacity-building and risk mitigation measures. Once the project staff is identified, the World Bank will develop a training module for capacity building of the staff who would be managing procurement under the project.

30. **Procurement risk and mitigation measures.** The main risks identified include: (a) limited exposure of procurement staff to World Bank procurement guidelines and requirements; (b) absence of a system for regular monitoring of procurement performance, complaints, and compliance; (c) limited experience in dealing with fraud and corruption issues; and (d) limited experience in managing procurement and contracts. The following mitigating measures have been identified: (a) recruitment of dedicated Procurement Specialists and Officers in the PMU/DPD offices; (b) procurement workshops and clinics to deal with project-specific needs; (c) project management workshops highlighting integration, interdependence, and the need for monitoring of procurement; (d) designing a procurement monitoring system, progress reporting, and capacity building; (e) workshops addressing contract management; and (f) project websites with procurement information.

31. **Procurement methods.** All methods and approaches contained in the Procurement Regulations and as agreed in the PPs may be used under the project.

32. **Procurement of works.** Works to be procured under this project will include civil works such as rehabilitation of tanks; desilting; and construction of recharge wells, rural roads, markets, collection centers, and other community infrastructure subprojects. Labor-intensive works that are estimated at a cost of less than US\$50,000 per contract will be procured in accordance with the National Shopping procedures. Works estimated to cost US\$50,000 to US\$10.0 million per contract will be procured under the National Competitive Bidding (NCB) procedures acceptable to the World Bank. International Competitive Bidding (ICB) procurement of civil works is not anticipated under this project; however, if the ICB procedure is required, procurements will be done using the World Bank’s SBDs. In the case of NCB and shopping, national bidding documents will be used in agreement with the World Bank.

33. **Procurement of goods.** Goods to be procured under this project will include surveying and levelling equipment, office equipment, furniture, visual equipment, vehicles, and ICT systems including networks, software, and printing of ICT materials and training materials, manuals, and other goods essential to the project implementation. Goods estimated to cost US\$50,000 equivalent or less per contract may be procured on the basis of National Shopping. Goods estimated between US\$50,000 and



US\$1,000,000 equivalent per contract may be procured using NCB procedures acceptable to the World Bank. Under this project, goods estimated to cost more than US\$1,000,000 equivalent will be procured using ICB procurement procedures. The procurement of goods will be done using the World Bank SBD for all ICB contracts and National SBD for all other contracts.

34. **Procurement of non-consulting services.** Non-consulting services required under the project including website maintenance, vehicle hiring, and janitorial services will be procured under the NCB or National Shopping procedures, following the same thresholds as for goods.

35. **National procurement procedures.** In accordance with the Procurement Regulations, when approaching the national market, as agreed in the PP tables in Systematic Tracking of Exchanges in Procurement, the country's own procurement procedures may be used. When the borrower, for the procurement of goods, works, and non-consulting services, uses its own national open competitive procurement arrangements as set forth in Sri Lanka's Procurement Guidelines 2006, such arrangements shall be subject to paragraph 5.4 of the World Bank's Procurement Regulations. Accordingly, no bidder or potential bidder shall be declared ineligible for contracts financed by the World Bank for reasons other than those provided in Section III of the Procurement Regulations.

36. **Community participation in procurement for business plan subprojects.** Under Component 1, the project will support a funding program for value chain investments. These investments will require recipients to carry out procurement actions. The procurement guidelines applicable to procurement under the project will also be applicable to such subprojects. Specifically, subprojects funded under the business plan program will follow community participation in procurement. Applicants will be required to include a procurement section in the investment proposal, which will be subject to review during the application review process. Details on procurement are included in the Project Implementation Plan. The MAREALDIFAR PMU and DPD offices will be responsible for supervising and monitoring procurement implementation under business plan subprojects.

37. **Complaint handling mechanism.** To promote an open, fair, and transparent procurement process, the implementing agencies will administer a complaint handling system for the project. The composition of the complaint handling committee, the form of complaint register, response time, decision-making mechanism, and other features will be outlined in detail in the Operational Manuals and be subject to the World Bank's review and clearance.

38. **Procurement information and documentation.** The following procurement information will be prepared and reported by the PMU/DPD offices: (a) complete procurement documentation for each contract, including bidding documents, advertisements, bids received, bid evaluations, letters of acceptance, contract agreements, securities, complaints (if any) and their resolution, and related correspondence will be maintained in order by the implementing agency, readily available for audit; (b) contract award information will be promptly recorded, and contract rosters as agreed will be maintained; (c) the PMU will submit semiannual reports with (i) revised cost estimates, where applicable, for each contract; (ii) status of ongoing procurements, including a comparison of originally planned and actual dates of the procurement actions, preparation of bidding documents, advertising, bidding, evaluation, contract award, and completion time for each contract; and (iii) updated PPs, including any revisions in dates or cost estimates, for procurement actions.



39. **Procurement thresholds.** Table 2.3 indicates the procurement thresholds that will be used for determining the procurement method and the prior-review requirements.

Table 2.3. Procurement Thresholds (High Risk)

Expenditure Category	Contract Value (Threshold)	Procurement Method	Contracts/Processes Subject to Prior Review
Works	≥ US\$10,000,000	ICB	All contracts
	< US\$10,000,000	NCB	<ul style="list-style-type: none"> All contracts over US\$5 million equivalent
	≤ US\$50,000	Shopping	None
	≤ US\$30,000	Direct Contracting	None
Goods and non-consulting services	≥ US\$1,000,000	ICB	All contracts over US\$1.5 million equivalent
	< US\$1,000,000	NCB	<ul style="list-style-type: none"> None
	≤ US\$50,000	Shopping	None
Consultant services (firms)	> US\$500,000	All competitive methods; advertise internationally	All contracts
	≤ US\$500,000	All competitive methods; advertise locally	<ul style="list-style-type: none"> All contracts over US\$0.5 million equivalent
		Selection of Types of Consultants - UN Agencies	All contracts
Individual consultants		Selection of Individual Consultant	<ul style="list-style-type: none"> All contracts over US\$0.2 million equivalent

40. **Procurement Plan.** The PMU and DPD offices will maintain and update PPs for their respective components. The PP will provide the basis for the procurement methods and prior-review requirements. It will also be available in the project database and on the World Bank’s external website. The PP will be updated by the PMU in agreement with the World Bank before the implementation support mission or as required to reflect actual project needs and improvements in institutional capacity. The project will only finance those procurements that are included in the PP and agreed with the World Bank in a manner as stated in the applicable procurement regulations.

41. **Procurement supervision.** The World Bank will conduct semiannual implementation support missions to review the procurement performance of the project. The PMU will provide semiannual procurement progress reports to the World Bank that include, at the minimum, status updates of PP implementation, procurement monitoring reports, and analysis of procurement performance, including the status of procurement-related complaints.

Environmental Safeguards

42. **Overall status of environmental management in the country.** Sri Lanka’s environmental clearance process has been in place for almost three decades, and most of the experience and knowledge of Environmental Impact Assessments (EIAs) were built by the Central Environment Authority (CEA) and



other Project Approving Agencies (PAAs). As many of the investments managed by the ministries and other institutions identified to participate under the project do not require to go through national environmental regulations, the capacity to manage environmental safeguards within these institutions is very low. However, some institutions such as ID have been involved in projects that required adherence to national environmental regulations and/or donor policies on environmental management. In addition, post EA monitoring is the weakest aspect in the Sri Lankan EIA cycle. The project will thus place strong emphasis on environmental due diligence mechanisms within the sector and post-clearance monitoring and will provide the training necessary within the implementing agencies to strengthen their capacity.

43. **Environmental safeguards management responsibilities.** The main role of PMU and DPD offices will be to ensure operational compliance according to the World Bank safeguard operational policies as defined in the Project Appraisal Document, Financing Agreement, and EAMF and GoSL policies as applicable. The PMU and DPD offices will assign or recruit a qualified Environmental Safeguard Specialist at the PMU level and Environmental Officers at the DPD offices level to be responsible for environmental safeguards related to the CSIAP investments. They will also recruit specialized consultants necessary for specific TA and to undertake SESAs and EAs as part of the implementation of activities.

44. **Capacity building on environmental safeguards.** According to the capacity assessment of the project implementing agencies in relation to the implementation of environmental safeguards, the MAREALDIFAR has only recently been exposed to a World Bank–financed project and ID has experience through DSWRPP and CRIP. Although some of the PCs (such as in the Northern and Eastern provinces) have been involved in World Bank–financed operations, the capacity built no longer remains due to the temporary nature of staff that were trained for safeguard implementation. The MAREALDIFAR and DoA have sufficient technical capacity for the implementation of sustainable agricultural practices such as pest management through IPM, as they implement national programs of similar nature on a regular basis.

Social Safeguards

45. **Social safeguards implementation arrangements.** The MAREALDIFAR will be the main agency responsible for ensuring that the project is carried out in accordance with the EAMF, the RPF, and other social safeguards instruments prepared under the project. The PMU and DPD offices will be responsible for the implementation of safeguards action plans prepared under the project, including providing guidance and oversight, and coordinating among the various national and subnational-level institutions involved in the project. The PMU and DPD will assign or recruit qualified Social Safeguards Specialists and Officers at the PMU level and DPD offices at the national and provincial levels for the preparation, implementation, and monitoring of safeguards instruments for the CSIAP investments. In areas where the PMU and DPD offices do not have sufficient capacity or expertise, specialized consultants will be recruited to carry out assessments (for example, SESA), conduct relevant studies for proposed infrastructure investments, prepare action plans, and so on.

46. **Monitoring and reporting.** The PMU, being the nodal agency responsible for the project, will also take on the responsibility for the overall monitoring of and reporting on project activities. The Social Safeguards Specialist at the PMU will coordinate with the Social Officers at the DPDs to ensure proper monitoring and reporting of safeguards implementation. Periodic progress report, at least on a semiannual basis, will be prepared and shared with the NPSC and the World Bank. In addition, the World Bank will monitor compliance with the standards of safeguard instruments during implementation support missions, and technical guidance will be provided accordingly.



ANNEX 3: IMPLEMENTATION SUPPORT PLAN

COUNTRY: Sri Lanka

Climate-smart Irrigated Agriculture Project

Strategy and Approach for Implementation Support

1. The strategy for project implementation support reflects the nature and complexity of the project as well as its risk profile. It also seeks to make the implementation support to the client efficient while remaining focused on the implementation of the risk mitigation measures identified in the SORT. This strategy is indicative and flexible, and it will be revisited and adjusted during implementation.
2. Project supervision will support the following areas: (a) fiduciary capacity to promote the establishment of adequate internal control systems and overall governance; (b) implementation of proposals under funding windows and their monitoring; (c) mitigation of potential political interference to maintain strong technical capacity, alignment with project objectives, and due diligence; (d) free, prior, and informed consultations with all stakeholders; (e) management of environmental and social factors and critical natural habitats without compromising the well-being of the local population; (f) communication campaign to maintain stakeholders informed and engaged; and (g) monitoring of project implementation, including results indicators and regular monitoring.
3. The World Bank will (a) provide implementation support and training as necessary; (b) follow up on the FM system including reporting requirements and adherence to the Operations Manual, including but not limited to accounting, reporting, and internal controls; (c) provide guidance on the World Bank's Procurement Regulations to the PMU and DPD offices and other participating agencies; (d) review procurement documents and provide timely feedback to the PMU; and (e) help monitor procurement progress against the PP.
4. The World Bank will emphasize opportunities for social development and environmental sustainability provided by the project, as well as adequate attention to gender equity particularly during community involvement. Within this framework, the World Bank will help monitor the implementation of activities and of safeguard instruments. The World Bank Social and Environmental Specialists will be available to provide timely guidance to the PMUs and will participate in field visits on a regular basis. A Communication Strategy will support the implementation of the project in its different areas of intervention. The strategy will also seek to support the implementation of consultative and accountability processes, including the GRM.

Implementation Support Plan and Resource Requirements

5. The World Bank's key team members are based in the Sri Lanka Country Office (CO) ensuring timely, efficient, and effective support to the client. Formal supervision and field visits will be semiannual, with more frequent technical support missions during the first two years of the project.
6. Technical inputs will be provided to ensure project design elements are adopted, to support the development of proposals and to enable timely capacity-building activities. The team's Implementation



Specialist will conduct a quarterly review of implementation throughout the life of the project. As soon as the relevant fiduciary staff are identified, training will be provided by the World Bank’s FM and Procurement Specialists based in the CO. The team will also help the PMU and DPD offices identify capacity-building needs in FM and procurement management. Support missions, including procurement and FM reviews, will be semiannual. Procurement and FM support will also be provided to the client as required. An orientation program on safeguard polices and the implications of safeguard instruments will be conducted for key staff that will be involved in project implementation and monitoring. The assigned Safeguard Specialists are based in Sri Lanka and can provide technical support at any stage of the project.

7. The World Bank will monitor compliance with the standards of safeguard instruments during implementation support missions, and technical guidance will be provided accordingly. A staff based in the CO will also be assigned to provide day-to-day supervision of all operational aspects, as well as coordination with the client and among World Bank team members. Task team leadership, as well as safeguards, procurement, FM, and technical aspects, will be managed from the World Bank’s offices in Colombo and with support from Washington DC and other COs. Consultants will be hired to provide advisory services in specialized issues. Formal supervision and field visits will be carried out semiannually or as needed to help promote satisfactory project implementation. These implementation reviews will determine the need for any restructuring and other changes in the project design and/or implementation arrangements. A midterm review will be undertaken within three years of approval. The focus of implementation support is summarized in Table 3.1.

Table 3.1. Staff Level of Effort for Project Implementation Support

Time	Focus	Skills Needed	Resource Estimate (Annual)	Partner Role
1–12 months	Technical and implementation support	Implementation Specialist	15 SWs	n.a.
		Technical Specialist	10 SWs	
	Capacity building	Agribusiness Specialist	6 SWs	
		Risk Management Specialist	4 SWs	
		Policy Support Specialist	4 SWs	
		Value Chain Specialist	8 SWs	
		Procurement Specialist	4 SWs	
Operational support	Operational Support Specialist	6 SWs		
	Social safeguards	Social Development Specialist	4 SWs	
	Environmental safeguards	Environmental Specialist	4 SWs	
12–60 months	Communication strategy development and communication support	Communication Specialist	5 SWs	
	Technical and implementation support and M&E	Implementation Specialist	12 SWs	
		Technical Specialist	10 SWs	
		Agribusiness Specialist	6 SWs	
		Value Chain Specialist	8 SWs	
		Policy Support specialist	4 SWs	
		M&E Specialist	4 SWs	
Engineer	4 SWs			



Time	Focus	Skills Needed	Resource Estimate (Annual)	Partner Role
	Economic valuation	Agricultural Economist	4 SWs	
	Operational support	Operational Support Specialist	6 SWs	
	Fiduciary implementation support	Procurement Specialist	4 SWs	
	Social safeguards	FM Specialist	4 SWs	
	Environmental safeguards	Social Development Specialist	4 SWs	
	Communication	Environmental Specialist	4 SWs	
		Communication Specialist	3 SWs	

Note: SW =Staff-week.

Table 3.2. Skills Mix Required

Skills Needed	Number of SWs	Number of Trips	Comments
TTL (Implementation Specialist)	15 SWs in Year 1; 12 SWs in subsequent years	Minimum 4 field trips annually	CO-based specialist
Technical Specialist	10 SWs annually	Minimum 4 field trips annually	Staff based in HQ/CO
Institutional Development Specialist	10 SWs annually	Minimum of 4 visits to all project sites annually	Consultant based in Sri Lanka
Technical Support Specialist (Co-TTL)	6 SWs annually	Minimum of 1 visit annually	Staff based in CO
Agribusiness Specialist	6 SWs annually	Minimum of 1 visit annually	Consultant based abroad
Procurement Specialist	4 SWs annually	Minimum 2 field trips annually	CO-based specialist
FM Specialist	4 SWs annually	Minimum 2 field trips annually	CO-based specialist
R&D Specialist	4 SWs annually	Minimum of 4 field trips annually	Staff based in HQ
Environmental Specialist	4 SWs annually	Minimum of 4 field trips annually	Consultant based in Sri Lanka
Operational Support Specialist/Co-TTL	6 SWs annually	Minimum of 4 field trips annually	Staff based in HQ
Risk Management Specialist	6 SWs annually	Minimum of 4 field trips annually	Staff based in HQ
Agricultural Economist	6 SWs annually	Minimum of 2 field trips annually	Staff based in HQ
Communication Specialist	5 SWs in Year 1; 3 SWs in subsequent years	Minimum 2 field trips annually	CO-based specialist

Note: HQ = Headquarters; TTL = Task Team Leader.



ANNEX 4: ECONOMIC AND FINANCIAL ANALYSIS

Economic and Financial Analysis

1. **Economic benefits.** The main economic project benefits are expected to come from (a) increases in the area under production and crop productivity through improved irrigations systems and farmers' adoption of climate-resilient technologies; (b) diversification from food grains into climate-adaptive, higher-value agriculture; and (c) improved postharvest management, value addition, and marketing. In addition to the increases in productivity and production of higher-value crops, it is expected that establishing PGs and facilitating private sector links will lead to increased incomes of beneficiaries due to (a) higher prices for the agricultural produce through better aggregation and new market channels, also resulting from improved market information; (b) potentially reduced input prices resulting from procurement by the PGs in bulk; and (c) increased value addition through CSCs established by the PGs for postharvest activities, including aggregation, cleaning, grading, sorting, and processing. It is expected that employment will be generated through increased demand for wage workers to contribute to handling, processing, and marketing. The investments in irrigation modernization and rehabilitation works will generate further employment opportunities during project implementation.

2. Potential economic benefits are also expected to accrue through flood protection with regard to avoided losses and damages associated with the failure of tanks that may be affected without rehabilitation, including (a) avoided repair costs of tanks breached as a result of floods, (b) on-farm benefits through avoided losses in agricultural production (including livestock and fisheries), (c) additional downstream benefits through avoided flood damage to dwellings and other infrastructure (for example, roads, bridges, and irrigation structures), and (d) avoided losses of human lives. Given the lack of data on past losses and damages due to tank failures in the project area and the difficulties in estimating the future reduction in losses and damages resulting from the project, an ex-ante analysis of these benefits has not been attempted.

3. The economic analysis focuses on the expected economic benefits resulting from increases in the area under production and productivity, as well as from diversification to higher-value crops. While there are significant benefits expected from improved postharvest management, value addition, and marketing supported by the project, these are difficult to quantify ex ante, considering that (a) the potential investments by PGs supported are diverse and demand-driven (that is, it is not possible to know for what investments business plans will be submitted/financed) and (b) the potential benefits from other investments under the marketing subcomponent (for example, support to ASCs and smart agri-marketing hubs) are difficult to estimate in monetary terms. However, during implementation, the EFA will be a key element in the preparation of business plans for productive investments by PGs (including storage and equipment for processing, grading, sorting, and packing).

4. **Financial analysis.** The financial analysis, which provides the basis for the economic analysis, has been carried out for the main crops and main climate-smart irrigated and non-irrigated agricultural technologies/practices promoted by the project for two scenarios: (a) with project (WP) and (b) without project (WOP), reflecting the existing technologies/practices. Detailed crop budgets were prepared for the main crops identified in the project hot spot areas, both in the command areas and in the upland areas, and for the two main seasons, Maha and Yala. In addition, crop budgets for selected perennial crops and fruit trees were prepared (banana, mango, and pineapple). For both the WP and WOP scenarios, the



impact of climate change was estimated in terms of expected annual yield decreases. The impact of extreme weather events (droughts/floods) has been estimated, based on available data on the frequency and severity of the events and impact on production in the past. All crop models are analyzed over a 20-year period.

5. The results show considerable increases in the gross margin, net profit, and return to family and total labor for all production systems. The financial analysis suggests that a 30 percent increase in average real annual household income of the targeted households is achievable due to the project investments and the promoted climate-smart irrigated agriculture technologies/practices. Table 4.3 provides an overview of the increase in yield and net profit per hectare expected from the project for the main crops that have been analyzed. Detailed results are provided in the EFA Appendix in the Project File. It is expected that the financial analysis will be periodically updated as an integral part of the project’s M&E system and as an input into the project evaluation at midterm and completion stages.

6. **Land use.** Overall, it is expected that the annual cultivated area will increase by 80 percent from around 28,100 ha to 50,700 ha, resulting from increased and more stable water availability allowing for the expansion of area and/or increased cropping intensity (additional seasons). Table 4.1 provides a summary.

Table 4.1. Changes in Cultivated Area (ha)

		Maha	Yala	Third season	Perennial	Total
Command area	WOP	25,562	17,004	0	—	42,565
	WP	29,853	28,894	14,730	—	73,478
	Increment	4,292	11,890	14,730	—	30,913
		17%	70%	n.a.	—	73%
Upland area	WOP	8,847	6,140	—	9,392	24,379
	WP	19,627	19,526	—	10,672	49,825
	Increment	10,780	13,386	0	1,280	25,446
		122%	218%	n.a.	14%	104%
Total area	WOP	34,408	23,143	0	9,392	66,944
	WP	49,480	48,420	14,730	10,672	123,303
	Increment	15,072	25,276	14,730	1,280	56,359
		44%	109%	n.a.	14%	84%

7. **Impact on crop production.** As shown in Table 4.2, the project will result in considerable increases in crop production. Although a specific market analysis was not carried out, given the relatively small share of this incremental production of the total production in Sri Lanka and the ever-increasing demand as a result of population increase and increases in income, it is safe to assume that the incremental production resulting from the project will, in general, not depress producer prices. It is expected that the project will not only contribute to the overall improved food security in Sri Lanka but also to improved nutrition, mainly through increased production and availability of nutrient-rich products, in particular vegetables and fruits. These will be marginally consumed by producers themselves but more importantly by consumers in rural and urban areas.



Table 4.2. Estimated Project Impact on Crop Production

Crop	Total Production ^a (MT)		Incremental Production ^a	
	WOP	WP	MT	% ^b
Command Area				
Paddy	100,586	144,651	44,064	44
Maize	0	12,383	12,383	n.a.
Green gram	0	8,730	8,730	n.a.
Cowpea	0	1,593	1,593	n.a.
Upland Area				
Maize	3,421	20,102	16,681	488
Green/black gram	348	137	-211	-61
Cowpea	119	129	10	8
Gingelly	240	735	494	206
Groundnut	633	4,469	3,836	606
Manioc	5,646	30,665	25,019	443
Red onion	1,336	6,420	5,084	381
Chili	1,570	13,701	12,132	773
Brinjal	2,848	14,930	12,082	424
Banana ^c	15,662	31,003	15,342	98
Mango ^c	16,390	33,192	16,802	103
Pineapple ^c	1,283	3,216	1,934	151

Note: a. In Year 7, with climate change scenario (no extreme weather event). b. As percentage of WOP production. c. Average per year over production cycle with climate change scenario.

8. **Economic viability and sensitivity analysis.** The EIRR of the project over a 20-year period for the base case, excluding benefits from GHG emission reduction, is 30.3 percent with an NPV of LKR 35,900 million (US\$239.4 million) at a discount rate of 10 percent. Placing a monetary value on the potential GHG mitigation benefits in terms of reductions in GHG emissions and increased carbon sequestration (estimated at 1.5 million tCO₂eq over the project life of 20 years), the base case EIRR increases to 31.7 percent. This assumes a shadow price of carbon per tCO₂eq of US\$40 for 2020 and an annual average price increase 2.25 percent as recommended by the World Bank.² On this basis, at the end of the 20-year period, annual GHG benefits are valued at around US\$6.1 million. The analysis was also conducted for a high shadow price of carbon scenario as recommended by the World Bank, resulting in an EIRR of 33.1 percent.

9. A sensitivity analysis was conducted to assess the impact of changes in the main parameters affecting the economic outcome of the project as a result of (a) changes in project costs, (b) changes in the expected benefits from the irrigation infrastructure and CSA production systems and value chains promoted by the project, and (c) delays in project execution due to the risks that have been identified in the project's risk analysis. The results show that the project remains economically viable even in the case of adverse changes in project costs and benefits. A reduction in project benefits by 40 percent results in an EIRR of 20.5 percent. A 20 percent increase in project costs combined with a 20 percent reduction in project benefits, coupled with a two-year delay of benefits, reduces the EIRR to 18.8 percent. Table 4.3 presents an overview of the sensitivity analysis.

² World Bank. 2017. *Guidance Note on Shadow Price of Carbon in Economic Analysis*.



10. **Impact on employment.** Agricultural employment (family and hired labor) on the benefitting farms is expected to rise from around 4.4 million to 6.8 million person-days per year at full development in Year 8. This is equivalent to around 9,700 additional full-time jobs (at 240 person-days per year). For households with limited availability of family labor, it is expected that there is sufficient hired labor available, particularly among the landless poor who are mainly employed in agriculture as wage workers and who would thereby benefit from significant employment opportunities. In addition, it can be expected that substantial employment will also be generated for handling incremental production, processing, and marketing as well as for the rehabilitation of tanks and irrigation structures.

11. **Fiscal impact.** The Government’s contribution to the project amounts to around 7 percent of the project investment costs (LKR 1.5 billion or US\$10.0 million). This contribution represents around 0.6 percent of the annual Government budget for the ministries/departments involved in the project (the MAREALDIFAR, ID, and MIHAPCLG). In addition, it is estimated that the Government would have to bear around 80 percent of the O&M cost of the tanks and irrigation structures restored/rehabilitated/modernized under the project, as well as the O&M cost of the access roads, amounting to around LKR 454 million (US\$3.03 million) annually at full development while the beneficiaries would have to cover the remaining 20 percent.

Table 4.3. Economic Rate of Return and Sensitivity Analysis

Scenario			EIRR (%)	ENPV (US\$, thousands)	ENPV (LKR, millions)
Base case (without climate co-benefits)			30.3	239,407	35,911
Base case (with climate co-benefits) ^a			31.7	239,407	35,911
Base case (with climate co-benefits) ^b			33.1	286,226	42,934
Changes (base case without climate co-benefits)					
Project Costs	Incremental Benefits	Benefits Delayed by			
+ 20%			26.6	217,381	32,607
+ 40%			23.6	195,356	29,303
	- 20%		25.8	169,500	25,425
	- 40%		20.5	99,593	14,939
+ 20%	- 20%		22.4	147,474	22,121
Base case		1 year	25.5	197,085	29,563
		2 years	22.0	158,691	23,804
		3 years	19.2	124,159	18,624
+ 20%	- 20%	1 year	21.8	135,642	20,346
		2 years	18.8	104,927	15,739
		3 years	16.4	77,302	11,595
Switching Values^c					
Costs	+	216%	10.0		
Benefits	-	69%	10.0		

Note: ENPV = Economic NPV; a. Low shadow price of carbon scenario: GHG mitigation benefits valued at US\$40 per tCO₂eq (starting in 2020 with average annual increases of 2.25 percent, reaching US\$60 per tCO₂eq in 2038); b. High shadow price of carbon scenario: GHG mitigation benefits valued at US\$80 per tCO₂eq (in 2020), reaching US\$120 per tCO₂eq in 2038. Based on: World Bank. 2017. *Guidance Note on Shadow Price of Carbon in Economic Analysis*; c. Percentage change in cost and/or benefit streams to obtain an EIRR of 10 percent, that is, economic viability threshold.



ANNEX 5: GHG CALCULATIONS

- Corporate mandate.** The World Bank has adopted, in its 2012 Environment Strategy, a corporate mandate to conduct GHG emissions accounting for investment lending in relevant sectors. The ex-ante quantification of GHG emissions is an important step in managing and ultimately reducing GHG emissions, and it is becoming a common practice for many international financial institutions.
- Data sources.** The primary data sources were the MAREALDIFAR, ID, MIHAPCLGS, DoA, DAD, and WFP.
- Results.** The net carbon balance quantifies GHGs emitted or sequestered because of the project compared to the WOP scenario. Over the project duration of 20 years, the project leads to overall climate change mitigation benefits of 1.5 million tCO₂eq that are emitted less than under a business-as-usual scenario. This is equivalent to annual mitigation benefits of 1.2 tCO₂eq per ha. While net benefits can be considered moderate to intermediate, it can be stated in summary that the project manages to realize significant mitigation benefits. However, the analysis shows that this impact is by far offset by the adoption of climate-smart irrigated agriculture practices including improved water management promoted by the project. Table 5.1 provides a summary of the results. The EX-ACT file with the detailed analysis is available in the Project File.

Table 5.1. Results of the Ex Ante GHG Analysis

Component	Over the Economic Project Lifetime (tCO ₂ eq)			Annual Average (tCO ₂ eq/year)		
	GHG Emissions of WOP Scenario	Gross Emissions of WP Scenario	Net GHG Emissions	GHG Emissions of WOP Scenario	Gross Emissions of WP Scenario	Net GHG Emissions
	(1)	(2)	(2-1)	(3)	(4)	(4-3)
Land use changes^a	0	-148,597	-148,597	0	-7,430	-7,430
Agriculture	5,383,696	3,153,000	-2,230,696	269,185	157,650	-111,535
Annual ^b	12,849	-355,133	-367,982	642	-17,757	-18,399
Perennial ^c	-131,491	-348,102	-216,610	-6,575	-17,405	-10,831
Rice ^d	5,502,339	3,856,235	-1,646,104	275,117	192,812	-82,305
Inputs and investments	1,671,237	2,544,703	873,467	83,562	127,235	43,673
Inputs ^e	1,324,315	1,917,442	593,127	66,216	95,872	29,656
Energy consumption ^f	346,241	583,830	237,589	17,312	29,192	11,879
Construction of new Infrastructure ^g	680	45,858	45,178	34	2,293	2,259
Total	7,054,933	5,551,534	-1,503,399	352,747	277,577	-75,170
Total per ha	117	92	-25	5.9	4.6	-1.2

Note: a. Irrigated rice expansion, perennial crop establishment, and annual crop expansion; b. Improved agronomic practices and water management on existing annual crop land; c. Expansion of perennial crops; d. Conversion of existing rice from conventional to SRI practices with improved water regime; e. Increase in agricultural input use resulting from area expansion; f. Increase in fuel consumption resulting from area expansion and irrigation infrastructure works; and g. Construction of access roads, ASCs, CSCs, and new irrigation systems.



ANNEX 6: GENDER MAINSTREAMING AND SOCIAL INCLUSION

Gender Issues in Climate Smart Irrigation and Agriculture

1. **The project builds on the achievements already made by Sri Lanka and intends on furthering these by addressing the existing gender inequalities particularly in the project communities which are characteristically rural.** Modern farming and mechanization of farm operations have contributed to loss of labor or employment opportunities – even the traditional roles played by women in production. These processes work to the detriment of poor and women farming households. Participation in market has become of increased importance although access to market has been a challenge, especially for women. The wide gap that exists between the farm gate price and the consumer market price with hardly any value addition indicates that the access to market is a general problem affecting both men and women. In the meantime, the changes in climatic patterns have had a major impact on farming communities as the agricultural potential is affected. Both these trends affect women more harshly than on men, as food including water security and care-giving is often women’s role.

2. **Climatic vulnerability compound existing social vulnerabilities:** Although Sri Lanka has been able to reduce overall poverty head count index from 26.1% in 1990 to 4.1% in 2016, the country still is confronted with the existence of lagging regions and pockets of poverty. First, majority of the population of these districts live in rural areas that contribute to 82.2% of total poverty. Second, female labor force participation is almost half than of men. Third, majority of the population consists of women. Fourth, poverty severity is highest in several districts selected for project intervention. Overall, rural women are exposed to poverty related risks and vulnerabilities.

3. **Critical Gender Gaps Identified in the Sector:** A recent study by the Food and Agriculture Organization: “Sri Lanka Country Gender Assessment of the Agriculture and Rural Sector” observed that women are assigned mainly unskilled or semi-skilled roles and do not have much opportunity to benefit from extension services and therefore display low productivity in their work. More than 60% of women working as unpaid family labor. Only 10% of female farmers receive extension services in comparison to 90% of male farmers. Contributory factors for women’s very low access to extension services include: (i) low female representation in rural level agricultural organizations although women’s engagement in agricultural production is often greater than that of men, and women are also among the farmland owners (ii) women have less technical business skills and access to markets unlike men; (iii) the double burden of women as caregivers and laborers prevent them from accessing knowledge and skills around extension services and accessing markets; (iv) most female headed households are situated in rural areas and barriers to mobility affect access to extension services and to markets; (v) under personal and general laws, women have less access to land ownership-this issue affects women’s access in decision making and extension services; and (vi) gender-based violence is an additional layer which limits women’s ability to participate in any form of labor, to negotiate equal shares of the income generated from selling produce from their husbands and limits their mobility to access services, trainings, and other associated services.

4. **Women and nutrition.** Recent studies on women farmers in Sri Lanka indicate that anemia among women in smallholder agriculture farming is a key issue of concern for the health sector. Factors within the agriculture sector that are impeding women’s economic and social empowerment include lack of ownership of productive resources such as land, lower wages, program focus on micro-enterprises and, poor avenues to engage in decision making processes. These indicate that a concerted policy and



programming interventions would need to be developed, implemented and monitored to achieve progress in enhancing the levels of nutrition among women farmers and their households.

Proposed Activities under the Project

5. **Gender mainstreaming and social inclusion is a focus area of CSIAP:** The project recognizes the central role that women play in agricultural production and will accordingly seek to increase women's access to extension services and new climate-smart technologies. The project team will develop a gender action plan (GAP) to ensure all key project activities are gender informed and thereby reduce the impact of the negative factors mentioned above.

6. **Some of the proposed activities to be included in the GAP are:** (a) conduct assessments and consultations to gauge women's access to extension services and ensure that climate smart technologies developed under the project are suitable for use by women farmers. The recommendations from these processes will inform the development of gender sensitive policy and training modules at MAREALDIFAR and partner CSO level; (b) targets will be set for delivery and quality of extension services to women; (c) Training sessions on new climate smart technology which are tailored for women and increase equitable access to the same will be conducted; (d) targeting women for recruitment in Farm Business Schools by placing quotas for women farmers, producer groups led by women and female households, while providing leadership and management skill development support; and mentoring for women through CSOs and networks; and (e) training modules around gender concerns and barriers for women's access to extension services within the ministry, communities and other relevant stakeholders will be developed and conducted. The training modules will provide guidance on how to create enabling working environments for women through the provision of childcare support and flexible working hours; and develop approaches to reduce women's vulnerabilities by strengthening and increasing women's access to GBV services; and address the harmful attitudes towards women and girls within communities.

7. **Additional activities:** Under the GAP creating structures and processes which support women's roles as caregivers and female heads of households will be developed to bridge gaps in women's access to agricultural assets and services e.g.: promoting gender sensitive methodologies for women to access to credit schemes and strengthen market linkages. Collaborate with the Ministry of Women and Child Affairs and the Ministry of Justice to amend general and personal laws to allow gender equitable access to land ownership.

Measurement of Results

8. As such, the project will assess whether the gap in women's access to extension services and new technologies has been reduced through project activities by capturing gender disaggregated data around beneficiaries who have adopted improved technologies and practices for increased yield through the following indicators: (a) number of Farmers reached with agricultural assets or services" disaggregated by gender; and (b) "Number of Farmers who adopted improved technologies and practices for increased yield" disaggregated by gender.

9. Furthermore, the project has set targets of at least 30% of targeted farmers receiving assets and extension services being women, and at least 30% of farmers adopting new technologies being women, a significant increase on the 10% access by women found across other parts of Sri Lanka.



ANNEX 7: PROJECT MAP

