Meeting of the Board
28 – 30 June 2016
Songdo, Incheon, Republic of Korea
Provisional agenda item 12(e)

GCF/B.13/16/Add.08

8 June 2016

Consideration of funding proposals – Addendum

Funding proposal package for FP016

Summary

This addendum contains the following three parts:

a) A funding proposal titled "Strengthening the resilience of smallholder farmers in the Dry Zone to climate variability and extreme events through an integrated approach to water management" submitted by United Nations Development Programme (UNDP);
b) A no-objection letter issued by the national designated authority or focal point; and
c) Environmental and social report(s) disclosure.

The documents are presented as submitted by the accredited entity, and national designated authority or focal point, respectively.

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Funding Proposal

Version 1.1

The Green Climate Fund (GCF) is seeking high-quality funding proposals.

Accredited entities are expected to develop their funding proposals, in close consultation with the relevant national designated authority, with due consideration of the GCF's Investment Framework and Results Management Framework. The funding proposals should demonstrate how the proposed projects or programmes will perform against the investment criteria and achieve part or all of the strategic impact results.

Project/Programme Title:	Strengthening the resilience of smallholder farmers in the Dry Zone to climate variability and extreme events through an integrated approach to water management
Country/Region:	Sri Lanka
Accredited Entity:	UNDP

GREEN CLIMATE FUND

Contents

Note to accredited entities on the use of the funding proposal template

- Sections **A, B, D, E** and **H** of the funding proposal require detailed inputs from the accredited entity. For all other sections, including the Appraisal Summary in section F, accredited entities have discretion in how they wish to present the information. Accredited entities can either directly incorporate information into this proposal, or provide summary information in the proposal with cross-reference to other project documents such as project appraisal document.
- The total number of pages for the funding proposal (excluding annexes) is expected not to exceed 50.

Please submit the completed form to:

fundingproposal@gcfund.org

Please use the following name convention for the file name:
"[FP]-[Agency Short Name]-[Date]-[Serial Number]"

A.1. Brief Project / Programme Information			
A.1.1. Project / programme title		**Strengthening the resilience of smallholder farmers in the Dry Zone to climate variability and extreme events through an integrated approach to water management**	
A.1.2. Project or programme		Project	
A.1.3. Country (ies) / region		**Sri Lanka**	
A.1.4. National designated authority (ies)		**Mr. Udaya Senevirathne** **Secretary,** **Ministry of Mahaweli Development and Environment**	
A.1.5. Accredited entity		**United Nations Development Programme**	
A.1.5.a. Access modality		☐ Direct ☒ International	
A.1.6. Executing entity / beneficiary		Executing Entity: Ministry of Mahaweli Development and Environment Beneficiary: About 1.5 million beneficiaries	
A.1.7. Project size category (Total investment, million USD)		☐ Micro (≤10) ☒ Medium (50<x≤250)	☐ Small (10<x≤50) ☐ Large (>250)
A.1.8. Mitigation / adaptation focus		☐ Mitigation ☒ Adaptation ☐ Cross-cutting	
A.1.9. Date of submission Date of last submission		29 March 2016 29 April 2016	
A.1.10. Project contact details	Contact person, position	Srilata Kammila Regional Technical Specialist - Adaptation	
	Organization	UNDP	
	Email address	srilata.kammila@undp.org	
	Telephone number	+66 2 304 9100 ext. 5264	
	Mailing address	United Nations Service Building, Rajdamnern Nok Avenue, Bangkok 10200 Thailand	

A.1.11. Results areas *(mark all that apply)*

Reduced emissions from:

☐ Energy access and power generation
(E.g. on-grid, micro-grid or off-grid solar, wind, geothermal, etc.)

☐ Low emission transport
(E.g. high-speed rail, rapid bus system, etc.)

☐ Buildings, cities and industries and appliances
(E.g. new and retrofitted energy-efficient buildings, energy-efficient equipment for companies and supply chain management, etc.)

☐ Forestry and land use
(E.g. forest conservation and management, agroforestry, agricultural irrigation, water treatment and management, etc.)

Increased resilience of:

☒ Most vulnerable people and communities
(E.g. mitigation of operational risk associated with climate change – diversification of supply sources and supply chain management, relocation of manufacturing facilities and warehouses, etc.)

☒	Health and well-being, and food and water security (E.g. climate-resilient crops, efficient irrigation systems, etc.)
☐	Infrastructure and built environment (E.g. sea walls, resilient road networks, etc.)
☐	Ecosystem and ecosystem services (E.g. ecosystem conservation and management, ecotourism, etc.)

A.2. Project / Programme Executive Summary (max 300 words)

1. The proposed project supports Government of Sri Lanka (GoSL) to strengthen the resilience of vulnerable smallholder farmers in the country's Dry Zone, particularly women, who are facing increasing risks of rising temperatures, erratic rainfall, and extreme events attributable to climate change. It will address technical, financial and institutional barriers related to achieving integrated water management to improve agriculture-based livelihoods of smallholder farmers in the Dry Zone. GCF resources, in conjunction with government co-financing, will invest in improving the community irrigation water infrastructure and associated agricultural practices, scaling-up decentralized drinking water systems, and strengthening Early Warnings (EWs) and forecasting for flood-response and water management. The **objective** of the project is to **strengthen the resilience of smallholder farmers, particularly women, in the Dry Zone through improved water management to enhance lives and livelihoods.** The **expected key Fund Level impacts are *increased resilience of health and well-being, and food and water security*** and ***increased resilience and enhanced livelihoods of the vulnerable smallholder farmers*** in the Dry Zone of Sri Lanka. The **primary measurable benefits** include about 770,500 direct and 1,179,800 indirect beneficiaries who will gain from improved water management, resilient agriculture practices, and provision of climate and weather information.

2. The project is aligned with GoSL's key development goals including enhancing food security and ending poverty and inequality. It is anchored in the country's National Climate Change Policy, National Climate Change Adaptation Strategy and Action Plan, and the commitments in the INDC. It promotes a paradigm shift through its integrated and holistic approach to enhancing water security and agricultural productivity at the sub-river basin level. By strengthening farmer organizations, agricultural value-chains, and community-managed investments, with a focus on women, the project promotes community-based enterprise development and private sector participation in the context of climate change adaptation. It yields sustainable development benefits by enhancing agricultural productivity (annual benefit USD 8M), reliable access to drinking water (access resulting in a savings of about 2M USD in labour hours), health co-benefits resulting from purification and filtration of water and improved agricultural practices, soil quality and cascade ecosystems, and lives and livelihoods of 390,000 women. (approx.) It yields a positive economic rate of return of 22%, leverages domestic financing (USD 14M), and builds capacities for sustained impact. GCF grant resources address the needs of highly vulnerable, poor, conflict-affected smallholder farmers in the Dry Zone of the country. The project was designed through extensive stakeholder consultations, including with civil society, in the targeted regions of the country and the NDA has issued a no-objection letter.

A.3. Project/Programme Milestone

Expected approval from accredited entity's Board (if applicable)	29 March 2016
Expected financial close (if applicable)	TBD (Date of agreement between UNDP and GCF)
Estimated implementation start and end date	Start: 01/12/2016 End: 30/11/2023
Project/programme lifespan	7 years

B.1. Description of Financial Elements of the Project / Programme

3. A grant financing mechanism is sought to support the prioritised interventions of this project. The Government of Sri Lanka seeks maximum concessionality for the proposed urgent adaptation actions that will benefit largely poverty-stricken and post-conflict regions of the island nation. The targeted populations' baseline situation of poverty, conflict-related displacement, livelihood insecurity and access to services are significantly worsened by repeated cycles of flood and drought, climate variability, and gradual erosion of health, nutrition and income status. These districts contain large numbers of female-headed households and unemployed youth. Post-conflict investments in roads, schools, hospitals and housing have failed to deliver the required development benefit due to the continued livelihood vulnerability and increasing exposure to impact of climate variability and extreme events.

4. The adaptation interventions in this project target largely public goods – village level irrigation systems, decentralized drinking water supply and early warning systems. As the project targets the very vulnerable and poor, there is little scope for end users to pay for the infrastructure established (beyond the operation and maintenance costs for minor repairs that are partly borne by the community-based organizations). There is no short or medium term prospect of private sector investment in the infrastructure for such public goods through the community-managed models. The additional investment required to build resilience to climate change in rural Dry Zone villages is prohibitive for a government that is constrained by heavy debt and an unfavourable balance of payments. Domestic financing is inadequate to meet recurrent costs and debt repayments.

5. GCF resources are, therefore, critical to overcome several barriers that constrain GoSL's ability to advance integrated approaches to rural water management for increased resilience of smallholder farmers in Sri Lanka's Dry Zone to climate change impacts. These barriers (detailed in Section C2) include: limited community capacities to design integrated solutions, sustainably manage rural infrastructure and resolve user conflicts over water management; limited knowledge and awareness of climate-change risks, impacts, and adaptation solutions related to water management; limited technical capacity on climate resilient practices, especially for infrastructure development, in irrigation, agriculture and drinking water supply; weak institutional coordination to implement a river basin approach in village irrigation cascade systems; and Limited financial capacity of communities and government agencies to sustainably meet the incremental costs of adaptation.

6. Current financing gaps in domestic financing are hampering GoSL's ability to implement adaptation measures and overcome these barriers. Without GCF resources, the vulnerable, conflict-affected smallholder farmers in Sri Lanka's Dry Zone will continue to face adverse impacts of climate change on their lives and livelihoods, steeping them further into poverty and food insecurity. The impacts of such a downward spiral would affect women the most, eroding their meagre coping capacity to deal with current challenges for food, income and household water in a region that has above-normal number of women-headed households. Therefore, GoSL seeks to combine GCF grant-resources with co-financing from its budget allocations to enhance water security and agricultural productivity for the vulnerable communities in three river basins of the Dry Zone through following three inter-linked Outputs:

- Upgrading and enhancing resilience of village irrigation systems (small-scale rainwater storage reservoirs and related watersheds) and scaling up climate-smart agricultural practices in three river basins of the Dry Zone;
- Enhancing climate-resilient, decentralized water supply and management solutions to provide safe, year-round drinking water to vulnerable communities; and
- Strengthening climate and hydrological observing and forecasting systems to enhance water management and adaptive capacity of smallholder farmers to droughts and floods.

7. Revenue generated as a result of these project interventions applies directly to the beneficiaries (for instance, improved agricultural incomes, savings from food/drinking water related expenditures, fee contribution from farmers to Farmer Organizations for O&M, and community payments to CBOs for water). In addition, the income accrued to CBOs from water supply is directed to subsidize water for households that are conflict-affected or have people with kidney disease, cover operation and maintenance costs for the infrastructure, support staff resources, and maintain a reserve fund that is used for community development activities. Therefore, the interventions do not lend themselves to reflows back to the government or the GCF, requiring maximum concessionality in grant financing.

Co-Financing

8. Co-financing from the government **(USD 14 million)** is leveraged to support project investments in village irrigation upgrading, water supply and generating meteorological information and advisories for flood and drought. Contributions from the five agencies which are Responsible Parties to the project include; 1) Department of Agrarian Development (DAD) contribution towards village irrigation systems (VIS) rehabilitation in the project targeted river basins and districts and

upgrading of Agrarian Service Centres (USD 6 million: USD 5.5 million in cash contributions, USD .5 million in-kind); 2) Department of Agriculture towards development and dissemination of climate resilient agriculture packages and the co-development of tailored agricultural advisories (USD 1.14 million: all contributions in-kind); 3) Department of National Community Water Supply to support establish and manage community water supply systems including the training of CBOs for this purpose (USD 2.11 million: USD 2 million in cash contributions, USD .11 million in kind); 4) National Water Supply and Drainage Board to design and development of community water supply schemes and water purification and filtration systems, water quality testing and monitoring, and O&M of these investments (USD 4 million: USD 3.5 million in cash contributions, USD .5 million in-kind) and Ministry of Disaster Management has committed USD 0.75 million as in-kind contribution for staff working on flood and drought response for agriculture and water management in project targeted districts, support to meteorological data and information sharing, convening meetings and working groups to develop flood and drought advisories and preparedness activities in these districts. This includes additional in-kind contribution from the Department of Meteorology, for the operational and maintenance of equipment (including agro met stations and automatic rain gauges that will be installed by the project) as well as staff support for development tailored weather and climate products.

Breakdown of cost estimates analysed by sub-component in local and foreign currency

Component	Output	Activity	Financing (MUS$)		Total Cost per output	
			GCF	Co-finance	Foreign Currency (MUS$)	Local Currency[1] (LKR)
Strengthening the resilience of smallholder farmers in the Dry Zone to climate variability and extreme events through an integrated approach to water management.	1) Upgrading and enhancing resilience of village irrigation systems and scaling up climate-resilient farming practices in three river basins of the Dry Zone	1.1 Improve technical capacity and knowledge management targeting ASCs, local field officials and community organizations for water management and climate-smart agriculture	0.695	1.000	30.296	4,372,599,983
		1.2 Improve and upgrade village irrigation systems in the identified cascades including restoration of upstream watershed	18.988	5.000		
		1.3 Develop and disseminate climate resilient agricultural practices	3.473	1.140		
	2) Enhancing climate resilient, decentralized water supply and management solutions to provide year-round access to safe drinking water to vulnerable communities	2.1 Improve capacity of water-supply support staff at district/divisions, selected partner organizations (NGOs) and CBOs to implement and maintain community-based drinking water related interventions	0.436	1.500	17.013	2,457,860,667
		2.2 Implement sustainable drinking water solutions through CBOs in coordination with the ASCs and National Water Supply and Drainage Board (NWSDB	10.467	4.610		
	3)Strengthening climate and hydrological observing and forecasting system to enhance water management and adaptive capacity of smallholder	3.1 Establish effective monitoring systems for drought, floods and water management	1.006	0.350	4.775	690,989,739

[1] Exchange rate used is as of 15 March 2016 (UN Operational Rates of Exchange)

	farmers to droughts and floods	3.2 Co-develop and disseminate weather- and climate-based advisories for agricultural and water management through ASCs and FOs to farmers and village water managers	1.932	0.250		
		3.3 Develop response measures to advisories and forecasts for agriculture, water management and flooding in cascade systems	1.087	0.150		
Total Project Financing			38.084	14.000	**52.084**	**7,521,450,389**

Similarly, the expenditures by types of activities are presented in Annex 5 (b).

B.2. Project Financing Information

	Financial Instrument	Amount	Currency	Tenor	Pricing
(a) Total project financing	**(a) = (b) + (c)**	…52.084…	million USD ($)		
(b) GCF financing to recipient	(i) Senior Loans (ii) Subordinated Loans (iii) Equity (iv) Guarantees (v) Reimbursable grants * (vi) Grants *	…… …… …… …… …… …38.084…	Options Options Options Options Options million USD ($)	( ) years ( ) years	( ) % ( ) % ( ) % IRR
	** Please provide economic and financial justification in section F.1 for the concessionality that GCF is expected to provide, particularly in the case of grants. Please specify difference in tenor and price between GCF financing and that of accredited entities. Please note that the level of concessionality should correspond to the level of the project/programme's expected performance against the investment criteria indicated in section E.*				
	Total requested (i+ii+iii+iv+v+vi)	…38.084…	Options		

	Financial Instrument	Amount	Currency	Name of Institution	Tenor	Pricing	Seniority
(c) Co-financing to recipient	Grant Grant Grant Grant	6.000 1.140 2.110 4.000 0.750	million USD ($) million USD ($) million USD ($) million USD ($)	Department of Agrarian Development (DAD) Department of Agriculture(DoA) Department of National Community Water Supply (DNCWS) National water Supply and	( ) years ( ) years	( ) % ( ) % ( ) % IRR	Options Options Options Options

				Drainage Board(NWSDB) Ministry of Disaster Management (MoD)			
	Lead financing institution: N/A						
	** Please provide a confirmation letter or a letter of commitment in section I issued by the co-financing institution.*						
(d) Financial terms between GCF and AE (if applicable)	Not Applicable						

B.3. Financial Markets Overview (if applicable)

9. The public goods nature of the proposed project entails no revenue-generation or cost-recovery. With GoSL seeking 100% grant resources for the proposed project, the financial market overview is not applicable.

C.1. Strategic Context

Country Background

10. Sri Lanka's recent economic gains, following the end of a debilitating 30 year war and the aftermath of the 2004 Indian Ocean Tsunami, are being threatened due to its increasing vulnerability to climate change which is characterized by increasing temperatures and unpredictability of rainfall**.** Almost 80% of poor Sri Lankans live in the rural areas and depend on agriculture for food and income. IPCC's fifth assessment report predicts that South Asia, including Sri Lanka, is vulnerable to drought, flood, food shortages and heat-related mortality[2]. The country has been experiencing severe shifts in its seasonal rainfall patterns accompanied by increased flood and drought in the last decade directly impacting rural food security and incomes[3].

11. While categorized as a middle-income country, Sri Lanka masks a complicated situation with deep regional disparities in wealth and wellbeing. About 5.2 million people — equivalent to a quarter of the population — were estimated to be undernourished in 2014.[4] This persistence of rural poverty, indebtedness and vulnerability, high youth unemployment at 19%[5], low participation of women in the labour force and large-scale migration in search of employment all indicate a high level of unevenness in growth and opportunity across the provinces and districts. Poverty and social exclusion are most prevalent in under-developed rural districts where agriculture is the major livelihood. The conflict-affected districts in the Northern and Eastern Provinces and peripheral districts are most deprived where many years of exclusion from the benefits of a steady economic growth and development resulted in greater social vulnerabilities.[6]

Dry Zone Context – agricultural livelihoods, poverty, and conflict

12. The Dry Zone is one of three climatic zones (dry, intermediate and wet) that divide Sri Lanka on the basis of variations in rainfall. It receives less rainfall than average and has pronounced dry periods. The Dry Zone covers 70% of the island's land area and is the country's agricultural heartland and the main area where the staple rice is grown. Small-scale farmers with land holdings of less than 2 hectares dominate agriculture in this region. Many other forms of employment in the Dry Zone are also related to agriculture – e.g. agricultural marketing, transport, and financial services. About two-third of the cultivated area in the country is rain fed or irrigated by numerous semi-rainfed minor reservoirs and diversions, collectively referred to as village irrigation schemes. A number of studies confirm that smallholder farmers cultivating under village irrigation systems are poorer[7] and more vulnerable than their Dry Zone counterparts who have access to major irrigation[8]. Such farmers are much more vulnerable to impacts of climate change than farmers cultivating under larger irrigation systems. As productivity and crop yields decline with low water availability and unseasonal rains resulting from climate variability and extreme events, farmers are dragged deeper into poverty and face food deficits, which have to be met by buying food for consumption, increasing the level of indebtedness and further eroding their capacity to cope with climate risks.

13. While the impacts of the conflict were experienced throughout the country (eg. suicide bombing and attacks on public places, economic downturn, social issues with war casualties), several districts in the Dry Zone were directly affected by the fighting and resultant large-scale displacement. The five districts of the Northern Province, three districts in the Eastern Province and peripheral districts such as Puttalam, Anuradhapura, Moneragala and Polonnaruwa were directly impacted by the war. This is about 60% of the country's land area and around two thirds of the coastline of the country. The end of the war in 2009 has allowed many of these districts to re-enter the economic mainstream. However, serious challenges remain in completing resettlement and meaningful resumption of economic activities in this region, complicated by frequent and recurrent climate-induced disasters and extreme weather events in the last five years. Recurrent floods and droughts in the last 5-6 years have battered all the districts struggling to overcome the direct impacts of conflict with severe impacts on food security, income, and water for drinking and sanitation of displaced/resettled communities as well as those living in remote border districts.

[2] http://cdkn.org/wp-content/uploads/2014/04/CDKN-IPCC-Whats-in-it-for-South-Asia-AR5.pdf
[3] http://www.climatechange.lk/NAP/NationalAdaptationPlan_RevisedFinal.26.10.2015.pdf
[4] http://www.ips.lk/talkingeconomics/2015/10/26/food-security-does-it-matter-for-sri-lanka/
[5] Labour Force Survey Annual Bulletin 2013
[6] UNDP 2012: National Human Development Report on Regional Disparities of Human Development
[7] IWMI 2010 and Sri Lanka Water Partnership 2012
[8] Sri Lanka Water Partnership 2012: Aheeyar M.M.M Climate change adaptation in water management for food security: Recent developments in Sri Lanka-A review of Existing Knowledge and Information.

Government of Sri Lanka's (GOSL) vision

14. GOSL has committed to Sustainable Development Goals, including the goals of ending poverty, achieving food security and promoting sustainable agriculture, promoting inclusive growth, reducing inequality and promoting inclusive societies. Two policy pronouncements of the GOSL made in the recent past three months, the Prime Minister's Economic Policy Statement[9] and the Budget Speech made by the Minister of Finance[10], emphasize the development of the rural economy, overcoming inequality of income distribution and supporting agriculture-based livelihoods as key priorities. The GOSL recognizes that no meaningful reduction in poverty can be achieved in the country without addressing the deleterious impacts of disasters and climate change. In responding to the challenges, the Government is focused on implementing a number of strategies as outlined in its National Climate Change Policy, National Climate Change Adaptation Strategy and Action Plan, and the Sri Lanka Comprehensive Disaster Management Programme. These strategies focus on adaptive measures to avoid/minimize adverse impacts of climate change to the people, their livelihoods and ecosystems and develop the country's capacity to address the impacts of climate change effectively and efficiently. GOSL has in its Intended Nationally Determined Contribution (INDC) to UNFCCC committed to minimizing climate change impacts on food security. The INDC and National Adaptation Plans focus on the water sector as a crucial crosscutting sector to be addressed; and, as such, water management for farming in the Dry Zone, outside of the major irrigation works, is a key priority of government intervention.

C.2. Project / Programme Objective against Baseline

Baseline Scenario: Dry Zone Water security

15. Traditionally, smallholder farmers in the Dry Zone use village irrigation systems (VIS) to deal with the seasonality of rainfall where demand for water always exceeded supply. A typical VIS comprises storage reservoirs (locally termed 'tanks') and water diversions (locally termed as "anicuts") to irrigate farm fields downstream. Many of these tanks are hydrologically connected along small streams and form "cascades". These systems evolved over the past two thousand years as an outcome of ancient farming communities' attempts to control seasonal flooding and droughts in the Dry Zone. This ensured the continuous cultivation of paddy during the year and provided drinking water for household and livestock consumption. In a cascade system, tanks, paddy fields, watersheds and canals are integrated with the natural environment forming a unique ecosystem that supports human needs and environmental water requirement. However, these systems have rapidly deteriorated in the past decades due to frequent floods and siltation from run-off, as well as human-induced impacts such as encroachment and cultivation in the watershed, deforestation of local catchments and unsuitable agricultural practices. Siltation due to intense rainfall events and evaporation losses due to high temperatures are more evident in small tank systems than in larger reservoirs. High run-off and siltation have decreased water storage and hence the viability of village irrigation schemes to provide continuous water resources to farmer communities[11].

16. Increasingly, prolonged dry periods in the Dry Zone districts have also limited communities' access to safe drinking water. The main source of groundwater in the Dry Zone is the weathered rock zone or regolith zone. This aquifer is recharged by rainfall, which is seasonal, and by water in village irrigation systems during the dry period. There is limited recharging of groundwater during the dry periods and contamination of drinking water sources due to high run-off and sedimentation associated with high intensity rainfall have impacted availability and quality of drinking water. Many small-scale water supply schemes also use irrigation reservoirs directly as water sources and many wells are linked to these systems, making the quality and availability of drinking water in the Dry Zone heavily dependent on the quality and availability of water in irrigation reservoirs. There is often insufficient water for domestic consumption, and water sources are often not available in close proximity to where people live (see Annex II, Technical Feasibility Report (herewith 'Feasibility Report'), Section 1.3).

17. Furthermore, the reduced recharge of groundwater during dry periods concentrates minerals in the available water, well above the recommended levels for potable water. Similarly, accumulated pollutants from human activities tend to be concentrated during dry periods. The heavy floods that have followed some of the prolonged dry periods have led to runoff that has resulted in erosion and loss of soil nutrients, compelling farmers to apply increasing amounts of inorganic fertilisers. This increases the concentration of pollutants in the water during the dry season, creating a continuously

[11] Aheeyar M.M.M Climate change adaptation in water management for food security: Recent developments in Sri Lanka-A review of Existing Knowledge and Information. Sri Lanka Water Partnership 2012

vicious cycle of drought, floods and ground and surface water contamination[12]. One of the biggest water-related health issues in the Dry Zone is the high incidence and geographical spread of Chronic Kidney Disease of Unknown Aetiology (CKDu). Though the exact cause of the disease has not been identified, heat stress related dehydration (partly a result of rising temperatures and reduced availability of potable water)[13] and decreasing quality/availability of potable ground water are contributing factors[14]. The disease has affected 81 divisions in 11 Dry Zone districts with the number of patients being highest in Polonnaruwa and Anuradhapura (north centre) districts. The morbidity and mortality rates are highest among male farmers between the ages of 35-50, which has left women widowed and children orphaned in many areas of the Dry Zone[15]. Women in the Dry Zone are especially impacted by lack of water for cultivation, home-gardens, livestock, drinking and other domestic uses. There are a higher percentage of women headed households in the project targets districts compared to the national average of 23% and many women are caring for sick and disabled family members, victims of the conflict or lately, those affected by CKDu.

18. Water security in the dry zone is also hampered by a lack of weather, climate and hydrological information which can be used for agriculture and water management. Farmers do not currently receive seasonal forecasts on which to base decisions about when and which crop varieties to plant. Water releases in the cascade system are not planned using early warnings of extreme rainfall, which would allow them to plan discharges and flood mitigation measures to limit damages to infrastructure. Additionally, there are limited weather and water level measuring stations to monitor the current situation as well as limited capacity to use this information to estimate floods and water availability which helps manage water supplies. For more details on the vulnerability and exposure to climate change in the Dry Zone, see Annex II, Feasibility Report, Section 1.3.

Baseline Investments

19. The Government of Sri Lanka invests close to a USD 150 million in its annual capital budget for rural development related programmes[16]. Around USD 68.7 million of underlying and parallel financing is invested by GOSL to meet regular, non-climatic development needs of target districts. Dis-aggregated by sector, these include: Repairs and restoration of damaged VIS (27.3 million); Investments in developing and improved seeds and planting material (7 million); New rural water supply investments in target districts (10 million); Repairs to water supply intakes and flood damages (2.07 million); CKDu control (safe drinking water and disease treatment - USD 13 million); Implementing water safety plans (0.5 million); Improved forecasting and disaster preparedness (2 million); and National Food Security Drive and Safe Agriculture Promotion (USD 7 million). The proposed project will invest in additional and incremental costs of adaptation building on such baseline investments.[17]

20. There have also been many other investments in the past in water management in the Dry Zone including through donor supported projects such as the Village Irrigation Rehabilitation Project (VIRP) and its successor National Irrigation Rehabilitation Project (NIRP), the JBIC/JICA funded Pro-poor Economic Advancement and Community Enhancement (PEACE), and the World Food Programme (WFP) funded small tank rehabilitation projects. In addition to these investments, there are few highly relevant projects that the proposed project learns from and builds on including: (i) Plan International's cascade based small tanks rehabilitation project in the Anuradhapura district which tested out the landscape approach to irrigation rehabilitation and Cascade Farmer Committee approach for improved upstream and downstream coordination; (ii) IUCN/HSBC project focused on restoring traditional elements of a cascading tank systems in the Dry Zone in Anuradhapura District; and (iii) two phases of the Community Water Supply and Sanitation Project (CWSSP) funded by World Bank which successfully tested out the community managed approach to rural water supply and was the precursor to the establishment of the Department for National Community Water Supply. (For further details, refer to Annex II, Feasibility Report, Sections 3.1 and 3.2).

[12]GOSL (2010) Sector Vulnerability Profile: Water, Supplementary document to the National Climate Change Adaptation Strategy 2011 to 2016 pp7
[13] Johnson R.J Heat Stress Nephropathy from Exercise-Induced Uric Acid Crystal Uria: A Perspective on Mesoamerican Nephropathy. American Journal of Kidney Disease. January 2016 http://www.ajkd.org/article/S0272-6386%2815%2901156-7/abstract
[14] Gunatilake, S.K., Samaratunga, S.S. and Rubasinghe R.T., 2014. Chronic Kidney Disease (CKD) in Sri Lanka - Current Research Evidence Justification: A Review. Sabaragamuwa University Journal 2014, V. 13 NO. 2 pp 31-58
[15]Ministry of Health and Provincial Renal Disease Prevention and Research Unit - North Central Province, in a presentation at the Technical Working Group for Project Preparation in October 2015
[16] http://www.treasury.gov.lk/images/depts/fpd/docs/budgetspeech/2016/bgtspeech2016E.pdf
[17] Specific co-financing of USD 14 million has been leverage as government financing to be directed towards the project targeted investments to proportionally finance the non-climatic drivers underlying proposed investments.

Climate change impacts

21. Trend analyses of temperatures recorded in Sri Lanka show that both daytime maximum and nighttime minimum temperatures are significantly increasing at a rate of 0.01 to 0.03°C per year[18]. Although total annual rainfall (past 10 years compared to the 30 year average) remains steady[19], the variability of the monsoon, including seasonal onset and duration, has been increasing. This is particularly true of the North-east Monsoon[20], which supports agriculture in the Dry Zone and where extreme weather events are now more frequent and severe[21]. Rainfall modelling under different climate scenarios presents a more complex scenario than temperature (which will continue to increase) but generally indicates that large areas of the Dry Zone will receive less rainfall in the medium-term (see Annex II, Feasibility Report, Section 1.2).

22. Sri Lanka is also affected by a number of climatic hazards and extreme events and these are projected to worsen with climate change.[22] Changes in rainfall are manifested in a higher number of intense/ heavy rainfall incidents leading to flash floods, as well as increases in the number of consecutive dry days and higher temperatures increasing the risk of drought during the dry season[23]. During 2010 - 2015, Sri Lanka suffered from a cycle of hydro-meteorological disasters in war-affected districts. Droughts and flood in quick succession, within a few months of each other affected the same vulnerable communities, greatly eroding their capacity to cope. The drought of 2012 was the worst hydrological deficit in past 20 years and one of the worst crop years for the country[24]. However, by January 2013, floods were affecting 10 districts, many of which were earlier in the clutches of drought. In 2014, drought affected over 1.8 million people in 16 districts.[25]

23. The impacts of climate related rainfall variability and extreme events directly affect incomes and food security of Dry Zone farmers[26]. Climate related vulnerability puts additional pressure on Dry Zone agricultural households whose lives are already circumscribed by poverty, low incomes, and recovering from three decades of conflict. A recent study by ESCAP[27] identifies Sri Lanka as one of the hotspots of food insecurity in the Asia-Pacific region, and according to IWMI (2010) farming districts in the dry and intermediate zones are more sensitive to climate change than the rest of the country due to land degradation and heavy reliance on primary agriculture. Recurrent hydrological disasters (flood and drought) have eroded the coping capacity of Dry Zone communities making them even less able to plan for and overcome climate-related variability in water availability. In the recent years, drought and subsequent flooding, 44% of the crop in the North and East was damaged or lost and paddy farmers lost on average more than 67% of their expected income. Climate change impacts in the Dry Zone also affect people's access to safe drinking water. Droughts reduce the sufficiency of water supply and falling water volumes increase the concentration of pollutants.[28] Floods also affect the water quality of drinking water sources, by directly polluting the sources as well as by destroying village irrigation reservoirs that provide a source for drinking water.[29] Deterioration of the village irrigation systems, increased runoff during frequent flooding, and longer dry periods compromise the recharging of the water in the aquifer leading to limited access to safe ground water for drinking.[30] This means people (usually women) have to travel longer distances to secure water

[18]Premalal KHMS and Punyawardena BVR 2013. Occurrence of extreme climatic events in Sri Lanka. In: Gunasena HPM, Gunathilake HAJ, Everard JMDT, Ranasinghe CS and Nainanayake AD (eds), Proceedings of the International Conference on Climate Change Impacts and Adaptations for Food and Environment Security. Hotel Renuka, Colombo, Pages 49-57

[19]Punyawardena et al. Spatial Analysis of Climate Change Vulnerability. Natural Resources Management Centre, Department of Agriculture, 2012

[20] National Climate Change Adaptation Strategy and Action Plan 2010-2016, Climate Change Secretariat and ADB 2010

[21] Premalal KHMS and Punyawardena BVR 2013. Occurrence of extreme climatic events in Sri Lanka. In: Gunasena HPM, Gunathilake HAJ, Everard JMDT, Ranasinghe CS and Nainanayake AD (eds), Proceedings of the International Conference on Climate Change Impacts and Adaptations for Food and Environment Security. Hotel Renuka, Colombo, Pages 49-57

[22] National Climate Change Adaptation Strategy and Action Plan 2010-2016, Climate Change Secretariat and ADB 2010

[23]Abeysekara, AB, Punyawardena, BVR. and Premalal, KHMS, 2015. Recent trends of extreme positive rainfall anomalies in the Dry zone of Sri Lanka. Annals of the Sri Lanka Department of Agriculture, 17: 1-4

[24]Central Bank of Sri Lanka. Annual Report 2012

[25] Ministry of Disaster Management, Disaster Management Center/ Disinventar Database

[26]Aheeyar M.M.M Climate change adaptation in water management for food security: Recent developments in Sri Lanka-A review of Existing Knowledge and Information. Sri Lanka Water Partnership/ Global Water Partnership 2012 P9

[27]Aheeyar M.M.M Climate change adaptation in water management for food security: Recent developments in Sri Lanka-A review of Existing Knowledge and Information. Sri Lanka Water Partnership Global Water Partnership 2012 P9

[28]Gunatilake, S.K., Samaratunga, S.S. and Rubasinghe R.T., 2014. Chronic Kidney Disease (CKD) in Sri Lanka - Current Research Evidence Justification: A Review. Sabaragamuwa University Journal 2014, V. 13 NO. 2 pp 31-58

[29]Sectoral Vulnerability Profile: Water. National Climate Change Adaptation Strategy and Action Plan 2010-2016, Climate Change Secretariat and ADB 2010

[30] http://www.iwmi.cgiar.org/issues/water-and-health/irrigation-and-health/

and farmers and their families reduce their water intake or resort to using unsafe sources (such as contaminated ground water wells or streams) during the dry periods. Further details on the climate change impacts on Dry Zone livelihoods are detailed in Annex II, Feasibility Report, Section 1.3.

24. Climate change impacts women and men differently. In rural communities in Sri Lanka, women's role in the household care economy makes them more vulnerable to climate change and disasters due to impacts on household water availability, health of family members, and safety of domestic assets such as livestock. Women traditionally manage household water, family gardens, and livestock and are in the frontline of managing impacts of reduced water availability and disaster impacts. This affects their own intra-household food security, which can be exacerbated during extreme climate events and in the aftermath of a disaster[31]. Women take full responsibility for the care of children, the disabled and the elderly. In the Dry Zone districts of Sri Lanka the impact of the war and disease has left a number of women widowed and pushed others into precarious work, in Sri Lanka and overseas, as domestic migrant labour.

Climate change impacts affecting baseline investments

25. Despite heavy investment in rural infrastructure and livelihoods in the past three decades, recent weather/climate anomalies combined with the impacts of conflict and disease have seriously undermined the resilience of Dry Zone smallholder farmers. There has been no consideration of climate-related impacts in the design, financing and implementation of the previously described communal infrastructure including rehabilitation of water supply and storage systems, promotion of small-scale irrigation systems and improvement of agricultural production systems. The lack of climate risk integration has undermined the sustainability of investments, especially those in rural water supply and small-scale irrigation. This can lead to a long-term situation in which a substantive part of post-conflict reconstruction, resettlement and development progress is set back by climate change-induced hazards, such as longer dry spells and drought and more intense rainfall and floods. The 2011 and 2013 floods caused heavy damages to irrigation structures especially in village systems. Both flood and drought compromise the viability of community water supply schemes and impact on household water security. The final project report of the World Bank's CWSSP project has pinned the reason for failure of community drinking water schemes on the drying up of sources; and flood damages that are beyond the community's ability to restore.[32]

26. Village irrigation systems provide the Dry Zone communities with a means of overcoming the largely predictable seasonality of rain. However, changes in rainfall patterns and intensities mean that this traditional solution needs to work optimally and efficiently in order to reduce the vulnerability of farmers (facing increasing exposure to drought, floods and inundation in downstream areas). Crop recommendations that are traditionally viable for the Dry Zone may become increasingly unviable in an environment experiencing extremities in rainfall. The many years of investment in seed and horticultural production for Dry Zone farmers, to overcome poverty in these areas, struggles to demonstrate long-term transformation as droughts and floods cause heavy crop losses and damages at every stage of the cultivation cycle. Floods plundered the harvests in 2011 and 2013, while in 2012 and 2014, deep drought affected land preparation and sowing.

Adaptation alternative for smallholder farmers

27. A paradigm shift in addressing adaptation needs among farmers in the Dry Zone lies in developing an integrated, holistic approach to water security that considers the entire 'cascade' or sub-basin system and the inter-connectedness of the village irrigation systems, agricultural practices, and water supply and management techniques for multiple uses, including drinking water. Village irrigation systems (VIS) provide communities with a means of coping with seasonal variability; and, improving their functionality is seen as a means of adaptation to climate change. Increased resilience to floods and droughts require cost-effective design changes and enhancements to the system to reduce flood damages and improve dry-season storage. Efficient, planned, climate-risk informed water management at field and sub-basin level should complement improved availability and access to water. This includes resilient and ecologically sustainable agricultural practices, which substantially deviate from current field practices. Introduction of improved, short duration rice and other crops, simple micro irrigation techniques, semi-mechanisation for water efficiency etc. can ensure longer water storage and availability for multiple uses. Many villages secure their drinking water from wells that are immediately downstream of the village reservoir. Increased water capture and storage will improve both year round access to drinking

[31] Ibid
[32] World Bank, 2011. Implementation completion and results report, Second Community Water Supply and Sanitation Report. Sri Lanka Country Management Unit. World Bank

water and improved agricultural practices, including the reduction of agro-chemical use, will in the long-term improve the quality of drinking water. Harvesting rainwater at household-level can also improve access to quality drinking water as rainwater is considerably safer and of better quality than ground water in the Dry Zone. In addition, early warning information, based on meteorological and seasonal forecasts, is a key part of the water management system. It enables preparation and mitigating measures to be enacted ahead of climate-related disasters and variability ensuring the optimal management of water resources.

Key Barriers addressed by the proposed project

28. In order to achieve the above solution, there are a number of barriers, summarized below, that need to be overcome. Further details on gaps and barriers are presented in Annex II, Feasibility Report, Chapter 4.

Limited financial capacity of communities and government agencies to sustainably meet the incremental costs of adaptation

29. Traditionally, small farmers have managed their village irrigation systems, building on local knowledge and generally using their own resources, and communities have operated and managed community water supply schemes collecting moderate fees for O&M. But years of neglect of the irrigation systems (due to disruptions in productive activities), and the cumulative deterioration resulting from increasing climate-related shocks, have reduced productivity and impoverished small farmers. Farmer Organisations (FOs) no longer have the capacity to invest adequately in restoring the infrastructure to working conditions, much less upgrading them to withstand climate change impacts. Flood damages to a single reservoir can range from USD 15,000-35,000, which is beyond the financial capacity of the communities. Where government investments are leveraged, the investment is not sustained due to lack of financial capacity to bear the incremental costs of addressing the severity of climate shocks on these small-scale systems. Existing Agrarian Service Centres (ASCs), while established as decentralised service units for extension and technical support to small holder agriculture, cannot meet the demands for increased service delivery- especially for financing climate smart agro-technology among farmers in a sustainable manner.

30. Government also has limited capacity to mobilize sustainable, local-level public financing for water management. The current drinking water crisis also warrants investment in long term solutions such as rainwater harvesting and short term capital-intensive schemes such as advanced purification and filtration options. The upfront capital costs of these investments are outside the financial capability of individual farmer households or of poor farming communities, and due to extensive demand, extends the capacity of government. In addition, communities lack the ability to effectively mobilise financing to manage water for multiple uses adopting climate smart technologies and methods. Furthermore, the remoteness and disconnect to the national road network in many districts makes village irrigation and drinking water systems an unlikely target for lone private sector investment, domestic or foreign.

Weak institutional coordination to implement a climate-risk informed, river basin approach in village irrigation cascade systems

31. As Sri Lanka's water resources are distributed along well-defined river basins with distinct geo-physical and agro-ecological characteristics, rural development plans that do not take a comprehensive river basin approach would be less sustainable and more exposed to climate change impacts on water resources.[33] A lack of awareness and understanding of climate change risks when managing water supply systems reduces the ability of government personnel to appreciate the problem.. The sectoral nature of development planning and implementation is further complicated by a multitude of actors at local level making it increasingly difficult for institutions to coordinate and work together. There are weaknesses and overlaps in the role of government institutions and this is evident in the case of village irrigation systems. The current institutional arrangement of the government and local/provincial governments is not strong enough to mobilize farmers to adopt climate-resilient agricultural and watershed management practices, as shown by the project implemented by Plan Sri Lanka[34]. In addition, the irrigation systems in a cascade are often managed by several organizations based nationally or provincially, with other organisations (national departments/community groups) managing drinking water. The absence of a coordinating mechanism is a constraint to operate and manage the cascade and its water resource as a planning unit.

[33] Sector Vulnerability Profile: Water. National Climate Change Adaptation Strategy for Sri Lanka (2011-2016) ADB and Ministry of Environment 2010
[34] Aheeyar M.M.M Climate change adaptation in water management for food security: Recent developments in Sri Lanka-A review of Existing Knowledge and Information. Sri Lanka Water Partnership Global Water Partnership 2012

Limited technical capacity on climate resilient practices, including for infrastructure development, in irrigation, agriculture and drinking water supply

32. A complete package of technology for the upgrading, improvement, operation and maintenance of village irrigation systems (VIS) is not readily available through government institutions. With regard to climate smart agriculture, the Department of Agriculture has developed a set of instructions and tools relevant to different ecological zones and climatic conditions. However, inadequate technical documentation and capacity to tailor these tools to the particular agro-ecological zone of a village reservoir system is a constraint to adopt such solutions at the farm level. There is also limited knowledge in the community on short term and long-term solutions to water quality issues. While there are plans by the NWSDB to extend current pipe-borne coverage to more households, either through main grid or community water supply schemes, the quality of local sources remains a major challenge. While the existing CBOs managing rural water supply schemes are generally functioning well, inadequate technical knowledge of water source protection as well as the ability to operate and maintain new innovations such as advanced filtration systems prevents these facilities being used in a sustainable way.

33. Dry Zone farmers in general and the farmers of village irrigation systems in particular, have inadequate access to seasonal climate information, both seasonal forecasts of droughts and early warnings about floods. There is no mechanism in place at local level to disseminate weather and climate related information to the farmer community. Even when the farmers receive early warnings, they lack of the capacity to respond to such warnings by adapting their agricultural and local water management activities. This gap was evident during the 2011 floods that affected a large number of village irrigation systems. Flooding was[35]due to the release of excess water in irrigation tanks (reservoirs) through the spillways. Reservoir operating rules and better communication between upstream and downstream users could have minimized the damage, but only if there is a reliable rainfall forecasting system[36]. At the river basin level, the problem is aggravated by non-availability of flood modelling and inadequate coordination of gate openings due to divided management responsibilities among many institutions and FOs.

Limited knowledge and awareness of climate-change risks, impacts, and adaptation solutions related to water management

34. Information on climate risks and adaptation options is not available to agricultural extension services, to field level extension officers, to local water managers and CBOs. There is a lack of knowledge flow and mechanisms for sharing learning in order to develop, disseminate, and adopt climate-friendly practices. This is true for village irrigation management, agricultural planning as well as for preparedness and response to extreme weather events. Besides limited infrastructure and technology to develop and disseminate climate-sensitive technologies and information, there is no institutional knowledge management framework that facilitates knowledge generation and sharing on innovative and adaptive measures which can be used to improve local water management, climate resilient crops, water quality improvement, seasonal weather forecasting and early warnings. Farmers and farmer communities in the Dry Zone have a very limited awareness of these adaptive solutions. At the same time the traditional knowledge on which communities depended for agricultural planning and water management is fast becoming inadequate in the context of climate change.

35. There is no local or provincial knowledge management mechanism that extracts lessons learned from recent interventions to integrate into a complete package of technology for the restoration, improvement, modernization, operation and maintenance for farmers. The Department of Agriculture (DoA) has initiated the development of climate-resilient cultivation packages, but their dissemination is constrained by the limited capacity of the agricultural extension services to work with farmers to adapt these 'packages' to deliver practical and sustainable solutions. Adoption of solution packages such as climate resilient crops, agro-ecological zone based crop recommendations by the farmers is weak, also due to inadequate linkages with markets for such newly developed crops. This is the result of a lack of linkages between FOs/ASCs and markets such as village fairs, supermarket chains including Keells and Cargill, and Dedicated Economic Centres managed by the Government. The Agrarian Service Centres that serve a cluster of villages can be a focal point for facilitating such awareness and coordination at local level, though currently their capacity to do so is limited. While the ASCs were designed to provide various services required by the farmers in a coordinated manner, the weaknesses in the ASCs - such as lack of trained advisors, lack of funding, lack of modern equipment such as computers

[35] In the aftermath of floods in the Dry Zone of Sri Lanka in January 2011, the International Centre for Water Hazard and Risk Management (ICHARM) under the auspices of UNESCO, fielded a mission to study the causes of floods.
[36] Jayawardena, A. W. 2011. Report on the UNESCO-ICHARM mission to Sri Lanka. Public Works Research Institute Tsukuba, Japan

and software such as GIS - prevent such services from being provided in an efficient manner. Field officers and FO and CBO officers currently do not have the necessary skills and computer software packages, which can be used to store, process and translate weather/climate data to local level warnings. These skills are required to understand a risk management approach in which weather, climate and hydrological information are one source of information, are lacking and there is a clear need for training on how to correctly interpret and use this information.

Limited community capacities to design integrated solutions, sustainably manage rural infrastructure and resolve user conflicts over water management

36. Beyond technical and financial barriers, there has been a decline in capacity among CBOs, FOs and field level extension services in terms of human resources and social organization. Confined to up-keeping VIS, many of which are already in varied states of deterioration, the FOs are becoming less dynamic as rural development organisations and are finding it difficult to attract young men and women to participate. Women's participation in traditional FOs is generally low, while in many villages of the north and east, women have formed their own organisations call WRDS (Women's Rural Development Societies).

37. FOs in VIS are currently farming areas less than 80 ha; and, as such, it is difficult to influence the markets as a production unit. Furthermore, the FOs are generally confined to the reservoir, sluice, spill and bund/dam, and the canal system. Therefore, the institutional arrangements for the management of the watershed are not clearly defined. There is an institutional gap with regard to mobilizing the FOs to include the watershed in their maintenance program and to arrange the linkages with the markets so that solutions/investments are holistically and sustainably maintained. FOs and other community based organisations at village level lack organizational capacity, guidance, access to technologies and training on integrated planning to design and implement climate smart solutions to local agricultural and drinking water issues and local extension officials lack the knowledge and understanding of an integrated approach to support them to engage in climate-smart water management.

Project objective, outcomes, and impacts

38. The key objective of the project is to support GOSL's vision to **increase resilience and enhance the lives and livelihoods of the smallholder farmers, particularly women, in the Dry Zone** through an integrated approach to water management to **safeguard food security, health, and well-being** against climate change risks and impacts. The proposed project aims to address the above barriers and improve on the baseline scenario. First, it invests in a landscape and integrated approach to restore and rehabilitate village tank cascade systems (small-scale rainwater storage reservoirs and related watersheds) to enhance their resilience and scale up climate-resilient farming practices. The project will facilitate dissemination of such agricultural practices through enhanced technical capacity of farmers and facilitation of market linkages to sustain these practices. It focuses on enterprise development for women farmers to promote them as micro-small enterprises (MSEs) and enable linkages to markets. The project also promotes participatory approaches and capacity building targeting FOs, field officers of agriculture-related government institutions, private sector and local NGOs. It strengthens awareness, learning, as well as knowledge generation related to climate-risk management and supports such coordination through the ASCs. Second, the project will improve investments and strengthen institutional capacities to deal with unavailability of safe drinking water by scaling up climate-risk informed solutions including rainwater harvesting and community-managed advanced purification and filtration systems. Drinking water in the Dry Zone is closely linked to irrigation systems. The shallow ground water table is heavily interconnected and many irrigation systems provide for both agriculture/livelihood and domestic use with increasing priority for safe drinking water. Enhancing resilience of VIS and associated watersheds and introducing climate-smart agriculture will also enhance availability and quality of drinking water. The project strengthens this interconnectedness through cascade-level, climate-risk informed water management planning with an integrated approach to irrigated and drinking water. Third, the project will invest in strengthening early warning, forecasting and water management systems to enhance adaptive capacity of smallholder farmers to droughts and floods. Capacities will be strengthened at national and local level to generate and share information for coordinated operation of irrigation and drinking water systems and agriculture planning (supported through the above two interventions) as part of climate risk management.

39. The main goal of this project is to contribute to climate-resilient sustainable development of Sri Lanka. The project expects to ***increase resilience of health and wellbeing, and food and water security and enhance livelihoods of the most vulnerable of the vulnerable smallholder farmers*** in the Dry Zone of the country. The project aims to *strengthen the adaptive capacity and reduce exposure to climate risks of vulnerable populations* through an integrated approach to water management and climate-resilient agriculture. The project targets vulnerable, conflict-affected farming communities, in particular, women, who continue to face adverse impacts of climate change on their lives and livelihoods. The project expects to result in strengthened and climate-resilient village irrigation infrastructure and capacities of

smallholder farmers for water management and climate-resilient agriculture; improved access to safe and reliable drinking water through supply systems able to withstand climate change and variability; and strengthened capacities of Dry Zone farmers to use early warning and climate information for water management.

40. The proposed project draws lessons from, complements, and build on on-going climate change adaptation projects such as: 1) UNDP/SCCF funded Strengthening the Resilience of Post Conflict Recovery and Development to Climate Change Risks in Sri Lanka that has just completed restoring a cascade of 31 tanks in Mi Oya Basin, Kurunegala District; 2) Adaptation Fund supported Addressing Climate Change Impacts on Marginalized Agricultural Communities Living in the Mahaweli River Basin of Sri Lanka which is testing out the model for Agrarian Service Centres to provide agro-technology and climate information to smallholder farmers; and 3) Climate Resilience Improvement Project (CRIP) of the World Bank which will conduct vulnerability and flood risk mapping in nine river basins. Further details on various related and relevant investments and projects are presented in Section 3.2 of the Feasibility Report. In addition, the North-Central Province Canal Project (NCPCP) of GoSL, a 10-year project supported by ADB, plans to extend major irrigation northwards to conflict affected areas, augmenting water supply to a number of large, medium and small tanks along the canal path. For further details on lessons learned and best practices including references to the evaluations and case studies for these projects, see Annex II, Feasibility Report, Sections 3.2 and 3.3.

41. However, these baseline initiatives (i.e. IUCN/PLAN, AF, SCCF, and CRIP projects) reflect narrowly focused solutions to a range of non-climate and climate pressures. While each provides important insights, they are constrained in a number of ways including either (a) not incorporating climate risks (e.g. the IUCN project), (b) does not adopt integrated, cross-sectoral approach (e.g. AF, SCCF, and CRIP projects). For instance, while managing water better is an essential component for adaptation strategies of the SCCF project, it does not address interlinked drinking water issues. The CRIP project, while adopting a river basin approach to improve climate resilience and disaster management, focuses primarily on the investments for physical infrastructure.

42. The GCF financed project represents a paradigm shift as it will represent the first time an integrated approach to water management is advanced in Sri Lanka incorporating climate change concerns and understanding linkages across river basins/sub river basins and including multiple uses of water. The project will set comprehensive standards and precedents that will influence future river basin management planning. In the proposed design, Village Irrigation Systems (VIS) are considered as entities contributing to climate resilience of the entire basin. In recent river basin development projects, sectors such as drinking water were considered as indirect beneficiaries, or again as “demand nodes” where allocation of the required quantity of water would satisfy management needs.

C.3. Project / Programme Description

43. It is noted that as there are many donor agencies and NGOs working in provision of sanitation, and due to the fairly high coverage of sanitation in the Districts such as Anuradhapura, Puttalam and Polonnaruwa, this proposal does not include provision of sanitation facilities. As mentioned in the Fesibility Report, past water supply projects report that better water availability has resulted in positive health impacts. Current access to adequate sanitation in Sri Lanka is high, and public perception of the importance of sanitation has increased. Coverage has increased from 83% in 2008 to 90% in 2013. However, piped sewerage networks presently cover only about 2.5% of the country’s population in major urban areas. Sanitation facilities of rural households are on site. These are not connected to sewerage systems similar to those in urban areas. Use of water for sanitation could marginally increase with project investments, especially in the community water supply option; however, the project support to households is mainly for accessing drinking water. National Water Supply and Drainage Board which falls under Ministry of City Planning and Water Management has the responsibility for rural water supply and sanitation[37]. The government has estimated a total investment of LKR 49 billion to achieve sanitation targets set for 2020 to be mobilized through government funding and development partner financing. UNCEF

37 http://www.google.lk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0ahUKEwiqvvzu863MAhWElZQKHeLLB4UQFggrMAE&url=http%3A%2F%2Fwww.adb.org%2Fsites%2Fdefault%2Ffiles%2Fpublication%2F161289%2Fsouth-asia-wp-035.pdf&usg=AFQjCNFB-QOcaVq5-i0S8Z8fKFaTfbRVdA&bvm=bv.120551593,d.dGo

supports GoSL (2013-17), partnering with National Water Supply and Drainage Board, Ministry of Education, schools, NGOs etc. to support national capacity development to reach minimum 80% of communities in low coverage areas to have equitable access to use of safe water and improved access to sanitation facilities.

44. The key component of the project is **strengthening the resilience of smallholder farmers in the Dry Zone to climate variability and extreme events through an integrated approach to water management.** The component comprises three inter-linked "sub-components" (which refer to outputs as per the GCF logic framework) that will build on best practices in baseline and relevant projects and overcome barriers discussed earlier. These are:

i. Upgrading and enhancing resilience of village irrigation systems and scaling up climate-resilient farming practices in three river basins of the Dry Zone (Output 1);
ii. Enhancing climate-resilient, decentralized water supply and management solutions to provide access to safe drinking water to vulnerable communities (Output 2); and
iii. Strengthening weather/climate and hydrological observing, forecasting and water management systems to enhance adaptive capacity of smallholder farmers to droughts and floods (Output 3).

45. **Geographical coverage, selection of cascade systems, and targeted beneficiaries:** The project will use a river basin/ sub-basin approach to deliver an integrated package of interventions for irrigation and drinking water (see Annex II, Feasibility Report, Section 5.2). The selection of cascades has considered income poverty, multi-dimensional poverty and disaster impact on these communities as criteria. Poverty is worst in divisions that had seen large-scale conflict related displacement and losses such as in Mannar District (Malwatu Oya River Basin). The number of flood and drought affected people obtained from the DMC was used to analyze the impact of rainfall variability on these communities. In the case of droughts, stakeholder discussions showed that, generally the whole Dry Zone is affected in an event. Therefore, categorization of cascades using drought impacts was difficult. The data indicate that coastal areas of Mannar, Puttalam and Trincomalee districts are highly vulnerable to floods. However, the middle reaches of Yan Oya basin is also subjected to increased flood incidence from high intensity rainfall and this was substantiated during the stakeholder meetings.

46. Selection of the target river basins and cascades within was, therefore, based on the following criteria that consider both socio-economic vulnerabilities and hydrological potential for adaptation.

a. River basins were selected on the basis of: 1) high and very-high vulnerability to climate change; 2) river basins with high presence of village irrigation systems and cascade systems, and therefore vulnerable/poor farming populations; and 3) Areas with significant lack of safe drinking water and high levels of kidney disease risk.
b. Pre-selection of target sub-basins or cascade systems within these river basins was based on poverty incidence, irrigation and hydrological potential (recommended by the District offices of DAD) and evidence of water quality issues such as CKDu, hardness and salinity.

47. The selected river basins are Malwatu Oya, Mi Oya, and Yan Oya (see Annex XI for the project map) with watersheds situated almost entirely in the Dry Zone, resulting in highly unreliable water yields and flow in these rivers. The Mi Oya river basin has been identified as the most vulnerable river basin in the country (See Annex II, Feasibility Report, Section 5.2 for rationale), and all three are situated in areas currently facing drinking water challenges. Given that vulnerabilities arising as a result of poor quality drinking water are difficult to be addressed with a purely river basin approach (water quality is also dependent on the presence of fluorides and contaminated groundwater aquifers cut across river basin boundaries), interventions to provide good quality drinking water will expand to districts connected to the targeted river basins i.e. Kurunegala, Puttalam, Anuradhapura, Mannar, Trincomalee, Vavuniya and Polonnaruwa Districts.

48. **Targeting Beneficiaries:** Climate-risk targeting as in the SCCF project has been taken into account for the GCF project. The GCF project further enhanced these criteria by including socio-economic vulnerabilities to extend beyond climate risks. Within selected cascades the project will target households meeting the below vulnerability criteria (one or more) for specific investments on climate smart agriculture, rainwater harvesting, community water supply programmes and flood early warning advisories:

1) Women headed households
2) Young unemployed women in target villages
3) Households with disability or kidney disease
4) Conflict displaced/resettled
5) Flood affected in the last five years

6) Families with children/women displaying low nutrition (underweight/ anemic)
7) Households with at-risk subgroups such as children and girls (children charged with households duties, neglected children not attending school, girls at risk)

Specific, targeted beneficiary groups for the various interventions are detailed in Section G, Annex XIII.

Output 1:Upgrading and enhancing resilience of village irrigation systems and scaling up climate-resilient farming practices in three river basins of the Dry Zone

49. The Feasibility Report (Annex II, Chapter 5) recommends a suite of best practices and tested solutions for improving resilience of and upgrading village irrigation systems to withstand climate change associated risks, focusing on prolonged droughts and intense rainfall events. Using a participatory approach that ensures community ownership during project implementation and beyond the project lifetime, these activities will improve the existing infrastructure and restore the watershed/catchment. Given the benefits demonstrated by Plan International, HSBC-IUCN and UNDP/SCCF financed projects, this Output will focus on improved climate-risk informed water management for agricultural production in the selected river basins by upgrading inter-connected cascade systems and associated agricultural practices. Considering the multiple uses of water, the project will invest in added elements (structural and landscaping) to village irrigation cascades to make them more resilient to climate change. Co-financing from the government will also be invested in these upgrades to address non-climatic drivers contributing to deterioration of these systems. Upgrading the village irrigation cascade systems will be delivered using a participatory approach that involves FOs, field officers of agriculture related government institutions, private sector and local NGOs. This Output will support capacity building, training, and knowledge generation for climate-risk management related to integrated water and agricultural management solutions.

50. The Output will also support targeted women farmers to adopt recommendations made by the Department of Agriculture for drought tolerant crops and climate smart cropping practices for these agro-climatic zones. Women producers will be strengthened as MSEs through technology transfer, improved extension services, business development training, and market linkages with support from private sector for technology and financing[38]. The climate-smart agricultural packages will also be widely disseminated through the Agrarian Service Centres and extension services of the Provincial Agriculture Departments.

51. This Output also contributes to generation of health co-benefits in conjunction with the investments in drinking water systems in Output 2 in an integrated manner. The investments in drinking water supply systems and treatment facilities address the climate risks and impacts on drinking water availability and quality. While the advanced purification and filtration systems address the immediate needs for clean drinking water in areas with high incidence of CKDu and other health issues, the enhancement of watersheds around VIS and the climate-resilient agricultural practices also address long-term issues around agricultural inputs and water contamination. The landscape and cascade-based approach to irrigation rehabilitation considers the connection between agricultural practices in the upstream and water quality of the reservoir and associated wells. This Output promotes use of low chemical inputs/more organic inputs based on soil testing leading to long-term benefits and possible reversal of the current contamination of land and water. Climate resilient agriculture and water quality management practices are detailed in Annex II, Feasibility Report, Sections 5.3.2 and 5.4. Cascade-level water committees also link in water quality aspects for drinking water (Output 2) into broader water management plans produced under Output 1. Furthermore, under Output 2, women's CBOs will be trained to regularly monitor source area - for source conservation and prevention of polluting agriculture practices - and measure water quality parameters. Health co-benefits are also enhanced through government's initiatives for food security and chemical-free safe agriculture[39] that will support Provincial Agriculture Departments' to adopt organic and resilient agriculture practices.

Overall, this Output includes the following key activities:

Activity 1.1 Improve technical capacity and knowledge management targeting ASCs, local field officials and community organisations for climate-risk informed water management and climate-smart agriculture: This activity will support the development of cascade level water management plans and guidelines that incorporate climate risks and

[38] In the project target areas, companies like Hayleys Plc and CIC Holdings provide modern agro-technology packages for farmers and farmer organizations. Other companies such as LOLC (Lanka Oryx Leasing Companies) have launched financing schemes to support farmer uptake of modern agriculture practices. Micro-finance institutions such as SANANA Bank and Sarvodaya Seeds Bank provide concessional financing for farmers to improve productivity. Companies like Holcim Plc fund CSR projects to support poor farmers to adopt water saving agro-technology packages.

[39] Launched by the Presidential Secretariat in March 2016

impacts in a participatory, multi-stakeholder approach. It will include training for FOs and other CBOs (women's groups) to implement and maintain the project investments in light of a changing climate. The activity will improve collaboration for planning and equitable water sharing between users in a cascade. ASCs in the river basin will be developed as knowledge and communication hubs including supporting cross-district, cross ethnic experience sharing through exchange field visits and field training programmes. It will address the barriers of limited technical capacity, institutional coordination, and knowledge for integrated approach to climate-risk informed water and agriculture management.

52. This activity is designed to improve the capacities of local level actors - field officers, farmer organizations and women's groups - to develop integrated climate-risk informed water management plans for 50 cascades. The plans and guidelines will be implemented through mobilization of cascade level water committees that will include men, women and youth from communities and the local field officers. The activity invests in training of trainers approach (for provincial and district officials and ASCs) and farmer training programmes to ensure design, implementation, and O&M of climate-resilient VIS as well as the development and adoption of climate-smart agriculture packages. It also invests in awareness raising, knowledge generation, and learning for climate-risk management including understanding and analysis of impacts and options for adaptation in the context of water management and agriculture planning. (e.g. input and crop selection based on climatic conditions and seasonal forecasts) Overall, this activity includes:

- Development of a detailed climate change risk informed sub-basin or cascade-level water resources development plan with the ASCs, with full participation of all relevant local government officials, FOs, women's organisations, and other CBOs in each village system. Drinking water issues, related to both access, especially dry season access (taking into account probability of longer dry periods), and quality will form an integral part of the cascade level water management plan and will be coordinated with Output 2.
- Development of technical guidelines on climate resilient water management at sub-basin/cascade level with standard operating procedures (SOPs) agreed between Departments of Agrarian Development, Irrigation, and Agriculture, in coordination with activities under Output 3 for EWs and seasonal forecasts.
- Formation, mobilization and training of cascade-level water committees for coordinated climate change risk informed water management at a sub-basin level and implementation of the water resources plan developed.
- Training for district, ASC and FO officials/ lead farmers across the 30 cascades to plan and implement VIS upgrading and maintenance taking climate change risks into account including financial and maintenance planning for viability of these systems beyond the project lifetime.
- Training on climate resilient agricultural practices (incl. crop and input selection, value-addition, water management etc.) for local extension officers, field officers, provincial and district-level officers involved in irrigation rehabilitation, agriculture, soil quality and forestry.
- Strengthen 77 ASCs as local knowledge, coordination, and communication hubs for planning, design, and implementation of the proposed project interventions. Invest in awareness building, knowledge generation, learning and exchange to support climate-risk informed, integrated water management and climate resilient agriculture. This includes the provision of essential IT software and mobile phone applications to support local level data gathering (including rainfall and water-levels) and dissemination.

Activity 1.2 Improve resilience of and upgrade village irrigation systems in the identified cascades including restoration of upstream watersheds. GCF resources and government co-financing will be used to support the design and upgrades of VIS, incorporating elements to enhance the resilience of these systems to climate change risks and impacts. About 325 village irrigation systems, including the upstream catchments, will be upgraded based on the cascade level water development plans. The interventions to upgrade the irrigation systems include: i. reforesting the watershed and re-introducing the vegetative interceptor to trap contaminants: ii. Restoring the reservoir bund (dam), spill, sluice and canals supplying the fields, and iii. Desilting the reservoir bed. These upgrades will incorporate climate risks and combine traditional and new design elements and practices including partial de-silting to deepen reservoirs close to the bund and retain more water during dry seasons, intensified reforesting of the catchment with multi-purpose trees, creating ponds and diversions for run-off capture in the catchment, upstream soil conservation practices like hedgerows, contour drains to prevent erosion, and creating small ponds in home gardens to capture intense rainfall.

53. Project will incorporate climate risk reduction elements in the upgrading of the infrastructure according to the projected climate change impacts. Observations during 2014 floods showed that a main reason for flood damages is the inadequate spillway capacity, poor condition of the spillway approaches and drainage paths and weaknesses in the dams. These will be addressed in the designs. To mitigate the impact of droughts, the design proposes increasing the storage by de-silting, decreasing silt inflow by upstream watershed restoration, and restoring the "mud-sluice". These are described in Annex II, TFR, Section 5. Construction design will be made climate resilient, and innovative designs will be

introduced to spillways, using experiences from on-going pilot demonstrations. These will include the use of labyrinth weir/duckbill weir for spillways, relocation of structures to minimize flood damage, increasing the discharge capacity of spill tail canals, improving the connectivity among the VIS within a cascade.

54. This activity addresses technical and financial barriers impeding the upgrade and maintenance of VIS to cope with climate change and extreme events. Capacity of the FOs will be enhanced to manage the VIS through technology transfer, financial management, and aggregation of FOs to remove the institutional barriers to sustain the interventions in the long term. FOs used a combination of pooled reserves and a nominal fee (approx. USD1 per year) from constituent farmers to support minor repairs and upkeep of the VIS. To revive and strengthen the financial viability, FOs will be supported to develop maintenance and financing plans to undertake and sustain minor operation and maintenance (O&M) beyond the project duration. Government departments undertake major repairs. Operational viability is ensured through the combination of upfront technical and financial support to FOs and a phasing in of domestic financing (government and communities') to support post-project O&M as well (See Annex XIII, O&M plan). The activity combines GCF resources and government co-financing to support climate-resilient design of the VIS. It includes:

- Participatory appraisal of improvement and upgrading needs incorporating climate risks, mapping of the VIS, and awareness raising for FOs to determine upgrading priorities and roles and responsibilities considering climate risks and observed climate vulnerabilities in the system
- Development of climate-risk informed intervention plans based on the cascade-level water resources development plan (produced through Activity 1.1) for each village reservoir in the cascade with FOs and CBOs, integrating traditional elements with new resilience measures. This includes integrating structural improvements to the bund, sluice, spill and canals with natural elements such as village forests, wetlands, tree cover along the reservoir and the channels and allowing for ground water recharge/silt trapping and run-off capture (as detailed in Annex II, Feasibility Report, Section 5.3.1).
- Implementation of investments in upgrading and climate-proofing 325 village irrigation systems. Upgrading will be carried out by FOs and will engage local-level civil works contractors as necessary. FOs and village level extension officers of the Department of Agrarian Services will be responsible for implementing and monitoring the planned improvements in consultation with the cascade-level farmer committees set up in Activity 1.1.
- Producing multi-year O&M and financing plans for FOs for sustained maintenance of the infrastructure and catchments. This includes stocking the tanks with food fish for harvesting during the dry season[40]. FOs generally lease out the tank for fishery post-cultivation season to generate revenue which builds up/maintains the FO reserve fund.
- Operation and maintenance of VIS through FOs and extension officials including adapting and improving design elements in light of a changing climate.

Activity 1.3 Develop and disseminate climate resilient agricultural practices with targeted enterprise development for women: The activity will support government extension services to develop and widely disseminate demand-driven, tested, climate change risk informed agriculture support packages which includes drought/flood resilient crops (seeds), organic inputs, soil and water management technologies and market oriented agro-processing technologies. Together with the seasonal climate forecasts (Activity 3.2) and improved marketing options for the recommended crops (supported by market mapping undertaken through this activity; crop recommendations co-financed by Department of Agrarian Development and Department of Agriculture), the climate resilient agriculture package will provide more food, income and improve ability of farmers to cope with seasonal variability and improve rational use of water. Based on the past experiences from other similar initiatives (e.g. IUCN/HSBC project and SAPSRI Project—refer to Annex II, Feasibility Report, Section 5.3), recommended practices include using short-term and climate resilient traditional rice varieties; landscaping/vegetative barriers for erosion control; crop diversification and composting in home gardens; use of organic fertilizers; crop diversification during the minor season; rational use of chemical inputs based on soil condition; agronomic and crop establishment techniques such as dry sowing in paddy fields in between seasons; and micro irrigation, with due regard to the agro-ecological regions. Resilient agriculture practices recognize the need to address climate-related factors (drought and flood resistant crops, shorter duration field crops) along with non-climate drivers for safe and chemical-free agriculture that contributes to long-term improvement of water quality.

[40] Fish fingerlings are purchased as government nurseries and introduced to the tanks. There are several native and exotic species that are recommended for aquaculture in Dry Zone minor tanks. Due to the high biodiversity in these systems, the fish do not need additional feed or maintenance. The fish can be harvested in cycles of 6-10 months depending on the species.

55. This activity will support enterprise development focused on women farmers and producers. It will strengthen the participation of women in agri-businesses through technology transfer, financial support, business skills development, and access to markets to ensure financial viability and sustainability. GCF resources will provide targeted packaging and support for uptake of the climate-resilient packages developed including inputs, information and advisories (linked to Output 3) and technologies (such as micro sprinklers/drip systems); facilitate value-addition based on market mapping (funded through this Activity); and linkages with markets including facilitation of private sector partnerships. Potential market linkages include supply to local markets (village fair or "Pola"), value added products for established supermarket chains[41], and market linkages through ASCs with private sector companies seeking high-value, export oriented crops[42]. Market linkages will also be advanced through information exchange between private sector, ASCs or Provincial Agriculture Departments and cascade farmer committees. Long term buy back agreements between women or youth producer groups and private sector companies[43] will be fostered through ASCs supervised by agriculture extension officers. The district private sector chambers will be linked to the ASCs through the Assistant Commissioner of Agrarian Services (ACAS) to strengthen market links with local private sector.

56. The activity will also enhance capacities of and collaboration with local NGOs, local ASCs (Agrarian Services Centre) and Provincial Departments' of Agriculture. In particular, ASCs in each target area will be trained to deliver integrated planning and implementation services for climate smart water and agricultural management in cascade systems. In conjunction with government co-financing, this activity will also develop capabilities (training and equipment) of ASCs to undertake scientific crop selection with farmers and Department of Agriculture through soil testing and input management. It will implement improved soil testing facilities to support farmers to rationally select crops, inputs and climate-smart practices according to soil conditions. It will support development of a suite of climate resilient agronomic practices in upstream home gardens, upland farm fields and downstream-irrigated fields. Overall, the activity includes:

- Mapping of farming systems and communities to support climate-resilient crop and input selection under each ASC. This will entail scientific crop selection in consultation with farmers and Department of Agriculture through soil testing and support for farmers to rationally select crops, inputs and agronomic practices according to soil conditions.
- Development, packaging, and dissemination of suite of climate-smart practices (including support for adoption of drought resistant crops, soil conservation practices and water-efficient cultivation methods).
- Enterprise development of women farmers through targeted implementation of tailored climate resilient agriculture packages including adapted, low-cost micro-irrigation and climate-smart agronomic practices in upstream home gardens, upland farm fields and downstream-irrigated fields.
- Establish farmer-level seed nurseries with women producer groups to support adoption of climate-resilient crops.
- Develop participatory market mapping for climate resilient crops including value-chain analysis to support market linkages.
- Strengthen value addition, marketing and business development (based on market mapping) for climate resilient agriculture products to support targeted women enterprises and promote private sector participation.

Output 2: Enhancing climate-resilient, decentralized water management solutions to provide safe year-round drinking water to drought vulnerable communities

57. Village irrigation reservoirs are a primary source of drinking water in the Dry Zone. The shallow ground water table is heavily interconnected and many irrigation systems provide for both agriculture/livelihood and domestic use with increasing priority for safe drinking water. GCF resources used for enhancing resilience of VIS and associated watersheds and introducing climate-resilient agriculture (as detailed in Output 1) will also enhance availability and quality of drinking water. The functional relationship of irrigation and drinking water lies in the climate-risk informed, integrated water resources planning at cascade level (Activities 1.1 and 2.1) as well as water supply and management informed by tailored advisories and SOPs established under Output 3. Water source protection committees will be created and mobilized with awareness of climate risks and impacts on water quality and equipment for quality testing and source monitoring.

[41] Such as Keells Plc and Cargills Ltd
[42] Melons, papaya, dragonfruit, gherkins and mango
[43] Such as Hayleys, Saruketha Organic Food Supplier, Keells Foods, Nutrena Animal Food

58. GCF resources will address the adaptation needs to ensure year round supply of drinking water which is jeopardized due to climate-induced prolonged dry periods and floods. These impacts also affect water quality as floods directly pollute water sources and falling water volumes increase concentration of pollutants. Deterioration of VIS, increased runoff during flooding, and longer dry periods compromise availability and quality of groundwater. Together with government co-financing that is leveraged, this Output will deliver drinking water solutions to poor farmer households through a multi-pronged partnership approach to replenish sources, build storage, supply clean and safe drinking water and address root causes of water quality issues (See Annex II, Feasibility Report, Section 5.4). One of the primary co-benefits of the GCF investment (aligned with government investments) in improving access to safe drinking water is the expected reduction in the disease burden (and current medical costs) in areas where kidney disease is fast spreading. A detailed discussion on climate and non-climate drivers of CKDu is presented in Annex XIII.

59. GCF resources and co-financing for rural drinking water supply will, therefore, be used to improve capacity of local officials, CBOs and FOs to incorporate climate-risks in design and management of sustainable rural drinking water solutions (community water supply systems - CWSS - and rainwater harvesting tanks). These various water supply options were successfully tested and proven by government and CSOs in Dry Zone locations as explained in Annex II, Feasibility Report, Sections 3.2 and 3.3. The design of the proposed community water supply schemes will incorporate climate-risks and be fully integrated into the cascade water management plan and managed by FOs and CBOs, informed by the tailored forecasts and advisories generated in Output 3. Many community-based organisations (predominantly women's organisations) are currently operating CWSS supplying water to households with technical support from the National Water Supply and Drainage Board for major operation and maintenance. For the community water supply schemes, the CBOs collect a nominal fee to support the regular upkeep and maintenance of the supply systems.

60. The project will also support the establishment of a selected number of advanced purification and filtration systems in areas where quality issues are particularly severe (including high CKDu risks) to support GoSL fill in existing gaps. (detailed in Annex II, Feasibility Report, Section 4.1). These investments supplement the enhancement of catchments around VIS and the climate-smart agricultural practices supported by Output 1 to address long-term issues around agricultural inputs and water contamination. These systems will also be managed by CBOs who charge households for the supplied water. The CBOs serve as social enterprises where some of the revenue from water supply is redirected to support the most vulnerable families like women headed households, and households afflicted by CKDu. Through project support, the CBOs can become financially viable organization supplying safer, reliable water and ensuring O&M of the systems through the income generated. The income generated is also used for operating costs of the CBO (employees, travel, etc.) and to maintain reserves for community development investments (such as sewing machines for female-headed households).

61. A number of community managed water supply schemes have been abandoned due to water sources drying up or poor quality of water. In many of the target districts, water shortages have compounded ground water contamination issues as well as reduced the water table well such that community water supply systems have begun to fail. Simple treatment alone will not be sufficient. The advanced filtration systems will operationalize abandoned drinking water systems providing clean water to households, hospitals and schools in these rural areas where, currently, users buy water from private vendors. The ease of access will have significant human development benefits in the region including gender benefits. It is critical to address the water quality issues to ensure community buy-in and to attract investments into long-term solutions. Without addressing the urgent and immediate issue of drinking water quality, for the communities in the targeted area, longer-term solutions will be challenged to take off. The GCF financing will invest in capacity building of these communities and long-term solutions to address water quality. This will pave the way for communities to invest in water supply schemes in the long-run as well. Overall, this Output includes the following key activities:

Activity 2.1 Improve capacity of water-supply support staff at district/divisions, selected partner organisations (NGOs) and CBOs to implement and maintain community-based climate change risk informed drinking water related interventions: Village irrigation reservoirs are a key source of drinking water in the Dry Zone. As such, the expected risks on drinking water on both the supply and demand side as climate change needs should be incorporated into the cascade water management plans in Output 1. The activity focuses on planning and capacity building to address the barriers of technical capacity and institutional coordination related to provision of safe drinking water to the Dry Zone communities. The capacities of local officials and women-led CBOs will be strengthened for climate-risk management

related to drinking water sources, supply systems, and quality monitoring and management. The activity will support training and mobilization to ensure the drinking water needs in light of a changing climate are incorporated into cascade development plans implemented through cascade-level water committees and water source protection committees. It will also build capacities for climate-risk informed planning for water source protection and quality monitoring coordinating with NWSDB. These will inform the selection of climate-risk informed treatment methods appropriate for the water sources.

62. This activity focuses on strengthening of women-led CBOs and their coordination with irrigation water management structures at divisional, ASC and village level. Training for CBOs will include climate-risk management, financial management to run water supply schemes as rural social enterprises, technical upkeep of systems, and regular refresher trainings at DNCWS to promote climate-resilient, O&M practices. Overall, this activity includes:

- Training of cascade-level water committees and the divisional officers on integrating climate-risks and adaptation options for drinking water access and quality into the sub-basin water resources development planning (plans developed under Output 1)
- Development of climate-risk informed, cascade-level water supply source protection plans and mobilization of water source protection committees.
- Training local CBOs, especially targeting women's groups in rural areas in conjunction with the DNCWS, to design and manage climate-resilient water supply systems as rural enterprises. The training will include climate-risk management, financial management, technical upkeep of systems, and regular refresher trainings at DNCWS to promote O&M best practices.
- Training of local masons to construct ferro-cement rainwater harvesting tanks for domestic purposes. This involves increasing the local skilled labour base to meet the demand for increased household level rainwater harvesting.

Activity 2.2 Implement sustainable, climate-resilient drinking water solutions through CBOs and government agencies: GCF resources and government co-financing will be invested to establish climate-resilient, community water systems (with simple treatment) for water extracted from irrigation systems and domestic rainwater harvesting (RWH) systems to supplement drinking water during prolonged dry periods. In addition, advanced purification and filtrations systems will be established to supplement long-term measures such as ecological agronomic practices (Output 1) that impact drinking water quality. This activity addresses the technical and financial barriers related to investments in rural water supply schemes, improved water treatment and purification schemes and domestic rainwater harvesting units. The design and operation of these systems will incorporate climate risks and information (including advisories and forecasts generated under Output 3) and will be fully integrated into the cascade water management planning (Output 1).

63. Typically, in rural Sri Lanka, community-based organizations (predominantly women-led CBOs) operate water supply schemes and treatment units as local businesses with technical support from the National Water Supply and Drainage Board for O&M. Generally in targeted villages, over 50% of the households are farmers so families are often represented in both FO and water CBOs but joint, climate-risk informed planning and monitoring of access and quality of water will be value added from the project. Enabling young women to take on the technical and financial roles of water supply infrastructure management has proven to be successful in earlier implemented community water supply programmes and this entrepreneurship model will be promoted through this activity and result in viable employment (through fee collection for part of the O&M costs) and income generation (from advanced purification and filtration systems water supply) (as detailed in Annex II, Feasibility Report, Section 5.4). A detailed O&M plan, including post-project O&M is provided in Section B of Annex XIII. Overall, this activity includes:

- Climate-risk informed design and implementation of 35 community water supply systems (with government co-financing) associated with village irrigation systems. These systems will take water from the reservoir or a well close to the reservoir and incorporate simple physical/biological treatments such as filtration, chlorination or UV to bring the quality to acceptable potable levels.
- Installing at least 4000 domestic rainwater-harvesting tanks of 5000-6000 litres. This involves establishing domestic rainwater harvesting units with community co-investments.
- Establishing 125 advanced water purification and filtration systems to treat existing drinking water intakes to ensure quality and safety and address water quality issues in areas with high incidence of water-related chronic diseases. 55 of these systems will be used to supply water for schools and hospitals.

- Support O&M of the infrastructure through women-led CBOs for CWSS, focusing on adaptation to the changing climate. The O&M for the advanced purification and filtration systems are covered through incomes generated by the CBOs managing these systems.
- Enhance water quality monitoring and source protection through source protection committees, addressing climate risks and impacts. Water quality testing will be facilitated through DCNWS/ NWSDB offices for technical support and laboratory services.

Output 3: Strengthening climate and hydrological observing and forecasting systems to enhance water management and adaptive capacity of smallholder farmers to droughts and floods

Interventions in this output are related to improvements in the generation, modelling, and dissemination of weather/climate and hydrological information. This will include providing access to weather/climate related knowledge, such as advice on future seasonal conditions (for agricultural planning) and early warning of storms and flooding for flood and water management including planning of water release from irrigation tanks. Section 5.5 of the Feasibility Report (Annex II) recommends a suite of interventions that address gaps in both physical infrastructure, training and capacity building which, if addressed, will improve the information available to plan water- and agriculturally-related management activities in the catchment. These include: monitoring weather and hydrological conditions so that there is a clearer and more disaggregated understanding of the current situation and worsening conditions are detected in a timely manner and improved forecasting both of weather conditions (high intensity rainfall causing flooding) and seasonal conditions (affecting agriculture and long-term water management). It also identifies additional activities towards disseminating and using this information for agriculture and water management in the cascades, as well as capacitating relevant institutions involved in forecasting and flood water management to iteratively generate flood risk maps. Improved climate and hydrological monitoring networks will provide fundamental data for improving forecasts in the long term (through developing statistical corrections to forecast model outputs), as well as calibrating satellite data and hydrological models to increase the extent to which information can be generated i.e. to areas not directly covered by the network. Training DoM, DAD, DoA and ID staff to operate and maintain these systems will contribute towards sustainability and successful implementation of the O&M plan with government co-financing sustaining these investments beyond the project duration. Improvement of forecasting capabilities within DoM will ensure they use updated techniques to generate accurate and skillful forecasts.

64. Participatory co-development of tailored advisories (with FOs, farmers, DAD and ID) will ensure that weather and climate information is incorporated into decision making in agricultural and water management in the three river basins. Satellite-based estimates of rainfall generated through this Output will be used to extend advisories to areas not covered by the ground-monitoring network, hence reducing reliance on the network of raingauges. Participatory meetings and inter-agency workgroups will utilize feedback from FOs, farmers and VIS water managers to develop advisories for agriculture and water management. Different media (TV, radio and mobile technologies) will be used for dissemination of warnings to reach all parts of society, particularly women. This Output also addresses capacity barriers at local level to plan for and identify response measures to warnings and advisories. It will focus on identifying responses to floods, through mapping flood inundation levels, as well as developing plans, which identify appropriate spill areas in cascade systems and agricultural assets and infrastructure at risk. It will also develop response plans for agriculture to seasonal forecasts and associated advisories, as well as appropriate water management options. Coordination meetings and SOPs between DoM, DAD, DoA, DMC and ID at the district level will be developed to ensure appropriate coordination takes place. This output includes the following key activities:

Activity 3.1 Establish effective monitoring systems for drought, floods and water management: This activity expands the meteorological and hydrological observational network coverage by installing, operating and maintaining monitoring equipment in key catchments and VIS systems. This will enable DAD, ID and FOs to better understand and monitor current conditions within the cascade systems, as well as streamflow, which may cause flooding of agricultural areas further downstream. Agrometeorological data will be used to estimate a suite of products including evapotranspiration and soil moisture, which will help detect the onset of agricultural droughts. Along with 10 automatic rainfall gauges the rainfall data will be used to support the development of satellite-based estimates in activity 3.2. Additionally these data can help refine MOS-based forecasts (see 3.2), once a suitably long time-series (approximately 3-5 years) becomes available. Automated water level sensors (50) will be used by DAD and ID to monitor water levels at critical points in the three river basins, which along with 8 streamflow gauges, will allow early detection of rising flood waters. Water levels and rainfall will be monitored in VIS systems by FOs and farmers using 330 manual staff (water-level) and rainfall gauges.

65. This activity also supports training and capacity building of DoM staff to develop weather (using Model Output Statistics) and seasonal forecasting abilities (using improved statistical and dynamical modeling), as well as of the relevant government departments' field officers, staff and FOs to operate and maintain (O&M) the equipment in the field. Where equipment is sited close to VIS systems, FOs will be encouraged to O&M equipment, taking care of routine maintenance, with technical agencies called in whenever specialized knowledge is required. Overall, this activity includes:

- Siting and verification for location of equipment based on target FOs, basins and waterways
- Establishment of 5 automatic Agro-meteorological stations (AMS) in key agricultural zones to monitor weather and climate conditions in real time
- Establish 10 automatic rainfall stations to improve the coverage for rainfall monitoring in the 3 river basins
- Establish 50 automated water level sensors to improve the monitoring capabilities of water levels in the 3 river basins
- Establish 8 streamflow gauges and rainfall sensors to improve knowledge of flows and potential downstream flooding
- Establish 330 manual water level and rainfall gauges in village irrigation systems and the three river basins.
- Training of forecasters to apply/develop new statistical and dynamical approaches to seasonal forecasting of drought and agromet related parameters
- Training of forecasters to apply/develop Model Output Statistics (MOS) and skill testing to weather forecasts of high intensity rainfall and flooding
- Training of field officers (DAD, DoA, DoM, ID) on operations & maintenance of equipment
- Install communications and ICT equipment at ASCs to enhance capacity to receive and utilise warnings and advisories

Activity 3.2 Co-develop and disseminate weather- and climate-based advisories for agricultural and water management through ASCs and FOs to farmers and village water managers:

This activity address institutional capacity and financial barriers related to provision of early warnings and forecasting. It supports the eestablishment of protocols and SOPs for generating, sharing and using weather data and information between national agencies (DoM, DAD, ID and DMC) and ASCs/FOs. It will involve the sensitization of communities and FOs to the availability of weather and climate information, as well as the function of any local equipment, which will be used to generate data used in the advisories. Through this activity a sense of ownership will be cultivated to avoid vandalism of equipment etc. The sense of ownership will be further promoted through co-development of information requirements for agriculture and water management. A training of trainers to use and adapt weather/climate based advisories will be undertaken to enable FOs and lead farmers to understand the historical context of climate information as a basis for understanding the implication of and using weather and seasonal forecasts.

66. Satellite-based estimates of rainfall will be generated and made operationally available to DoM and other agencies as a basis for developing new agro-meteorological and water management products in areas not sufficiently covered by rainfall measurements. Development of these products will be discussed and designed through inter-agency working groups, which will also contribute to synthesizing and balancing product development with information requirements articulated through the co-development meetings with FOs and communities. Additionally, advisories for agriculture, water management and floods will be synthesized and condensed for SMS/mobile communications, as well as being translated into local languages. These will be disseminated through mobile platforms (using the DEWN system operated by DMC and Dialog telecom), as well as other media such as radio. Staff from all agencies will be trained to understand weather/climate forecasts, and a central repository and GIS tools used to combine weather/climate information with the flood risk mapping (from 3.3) and other sources of risk-related information (on assets, poverty, vulnerability), including drought monitoring information from the IWMI. A market study will also help to identify potential paying clients for weather/climate-related services in the future. Specifically activities will entail:

- Sensitization of communities through FOs and ASCs, for uptake of agromet information and advisories
- Co-development of information requirements through ASCs (FOs, DoM, DAD, DoA), including training of trainers to understand and use advisories
- Generation and operationalization of satellite-based estimates of rainfall, including training of trainers to ensure DoM staff are able to access and use the information.
- Development of advisories for agriculture and water management, including inter-agency working groups.
- Synthesize and disseminate agriculture advisories on agricultural best practices, flood warnings, and water-related information linked to weather and seasonal forecasts through media such as radio shows, as well as mobile and other platforms. Real-time water level information and early warnings will be disseminated/ communicated to the FOs through local mobile networks.

- Design SOPs for data sharing (including data collected by agromet, rainfall, streamflow and water level sensors) and communication of flood/drought warnings between DoM, DAD, ID and FOs.
- Develop procedures for combining data collected through a central repository to identify risks using GIS-based tools. Meteorological and hydrological data combined with information on assets, livelihoods and vulnerability.
- Training of staff to use and understand weather and seasonal forecasts for water management (DoM, DoA, DAD, ID).
- Training and development for DOM/DAD/DoA/ID staff to access IWMI drought monitoring information and combine with locally collected drought related information and forecasts.
- Market study to establish potential revenue generating services for agricultural, water management and flood advisories/warnings in the 3 river basins. This study will lay the groundwork for future work to generate public and private sector participation and markets for use of tailored advisories.

Activity 3.3 Develop climate-risk management response measures based on advisories and forecasts for agriculture, water management and flooding in cascade systems:

This activity will develop and plan appropriate climate risk management responses to the advisories developed through activity 3.2, including the additional impacts expected through climate change. This will involve inundation area mapping of areas in the three river basins prone to flooding in order to set the baseline flooding scenarios expected without climate change. Fieldwork will be undertaken to estimate historical flood lines and geo-locate assets, property and agriculturally-related infrastructure in these areas and this information, along with climate and hydrological observations, will be collected and used to identify areas prone to flooding. Flood risk maps, along with those of assets and infrastructure at risk, will be used in the data repository described in 3.2. Based on this and stakeholder meetings with communities and FOs, plans will be developed for VIS and downstream communities to prepare for and respond to flood warnings, including measures such as improved drainage, water diversions and synchronizing the opening of spill gates. Plans will include assessments of the potential for change in climate to alter these recommended measures, helping to identify measures that are likely to be robust under climate change, as well as those measures that may break down if the climate changes significantly. (e.g. if rainfall intensities increase) Similar plans for responding to agricultural and water management advisories will be developed in consultation with FOs and communities, as well as preparedness measures to protect assets and agricultural infrastructure. Agriculture and water management plans will identify suitable responses to advisories for drought (including the impact of multi-season and multi-year droughts the risk from which may increase in the future) and higher than average rainfall, including the provision of water for irrigation, which needs to be balanced with the provision of safe drinking water (through Output 2).

- Conduct inundation area mapping, including assets, property and services at risk from flooding under different flooding scenarios (including under future changes in rainfall).
- Design and implement SOPs at the district-level to enable coordination of responses to agricultural and water management advisories, between DoM, DAD, DoA, DMC and ID.
- Develop community/FO based response plans for agriculture and water management, including stakeholder meetings at ASCs, which integrate advisories and forecast products, as well as potential changes due to climate change.
- Develop flood response measures for VIS/drinking water systems (DoM, DAD, ID). Identify spill areas in 30 cascades. Synchronize spill gates with forecast rainfall and inflows. Promote adaptation measures such as improved drainage in command area and water diversions, ponds and wetlands in the watersheds of flood prone tanks in the cascades. Identify measures that are more likely to be resilient under extremes in a future climate.
- Develop flood preparedness measures to protect assets and agricultural infrastructure in 30 cascades. Simple household adaptation measures for livelihood and water security (such as raised platforms for grain storage and livestock/raised rainwater storage tanks) will be introduced to households facing flood risk.

C.4. Background Information on Project / Programme Sponsor (Executing Entity)

67. The Ministry of Mahaweli Development and Environment (MMDE) of Sri Lanka is the sponsor for the proposed project. The Cabinet Ministry was created in February 2015 by amalgamating the mandates of two large Ministries under the President. The MMDE is mandated to coordinate and oversee environmental conservation and natural resources management and water management and includes the only river basin authority of the country. The ministry has framed key policies for adoption in management of environment and natural resources of the country including on forest management, waste and chemicals management and climate change.

68. Financial status and project support: For 2016, Ministry of Mahaweli Development and Environment has received an annual allocation of USD 500 million from the government for management of environment and natural resources of the country. Over the past few years, Ministry of Environment has received and managed projects with grant funding

including from Government of Korea, Government of Japan, Asian Development Bank, UNDP, WFP, UNEP, and EXIM Bank – Korea. The Ministry's recurrent expenditure allocation for the upcoming years of 2016 and 2017 will be USD 26 million and USD 29.4 million respectively. Further, the capital expenditure denoting investment in environmental and water management projects implemented throughout the country for the two years is projected to be USD 55 million for 2016 and USD 67 million for 2017. These include projects funded by GEF, Adaptation Fund and EU.

69. MMDE has extensive past experience in executing large foreign funded projects and is also currently managing ongoing portfolio of foreign and government funded development projects. MASL (Mahaweli Authority of Sri Lanka) operates under MMDE as a semi-autonomous institution which has completed an array of large hydro and water resource development initiatives and its past experience will serve well in the implementation of the proposed project. MMDE has played a major role in the successful implementation of the Pro-poor Economic Advancement and Community Empowerment (PEACE) project (USD 33.6million, 2006-2011) in Kurunegala and Anuradhapura Districts to empower the farming community for increasing the productivity of their Agriculture lands through rehabilitation of Irrigation systems using a long given by the Japan Bank of International Corporation. In addition, major projects such as, Uma Oya Multipurpose Development Project (UOMDP, over USD500 million) and Dam Safety and Water Resource Planning Project (DSWRPP, over USD70 million) are currently being implemented.

70. As the Implementing Partner under UNDP NIM modality, MMDE will provide project management support and in-kind contribution to project implementation through its technical and administrative staff and systems. It will provide operations and management support to the project through its staff as well as the dedicated PMU set up for the project. MMDE will also function as the 'Executive' in the Project Board. A micro-capacity assessment for the IP was undertaken by UNDP for another project with satisfactory results. A detailed capacity assessment will be undertaken for the IP for the proposed project prior to project implementation.. Departments, Statutory Institutions and Public Corporations under the purview of the MMDE are: Mahaweli Authority of Sri Lanka, Central Engineering Consultancy Bureau (CECB), Moraghakanda & Kalu Ganga Reservoir Projects, Dam Safety and Water Resource Planning Project, Uma Oya Development Project, Department of Forests, Central Environmental Authority, Geological Survey and Mines Bureau, State Timber Corporation, Marine Environment Protection Authority, National Gem and Jewellery Authority and Coast Conservation Department.

C.5. Market Overview (if applicable)

71. The project, through Activity 1.3, will work with farmer organisations and producer groups (focusing on women and youth) to create sustainable and fair markets for agro products developed and promoted as climate smart crops. The project will engage with established marketing networks in the provinces and local regions, but work towards creating niche markets for ecologically produced and climate resistant new crops/agro technologies. The products and services generated by the project include climate smart agro-technology packages and tailored agricultural advisories and information for water management. These value-added products are relevant for: (a) SMEs such as small-scale farmer enterprises, community drinking water supply enterprises, technology providers, agri-businesses, commercial scale fruit, spice and vegetable producers, agro product traders and transporters; and (b) Public sector agencies and private service providers in sectors such as agriculture, crop insurance, local tourism, agriculture transport, water supply system managers and water managers in a multitude of organisations. Finance and insurance services for agriculture and related service provision could also be spurred through reliable seasonal forecasting and tailored agro-technology packages.

C.6. Regulation, Taxation and Insurance (if applicable)

72. There are no applicable licenses or permits for the implementation of the project. In addition, there are no tax implications applicable to village irrigation development, community water supply, and domestic rainwater harvesting systems or agriculture development. Agrarian Development Act stipulates the regulatory environment for development of village irrigation systems and water management therein (including water sharing among multiple users). Department of Agrarian Development and National Water Supply and Drainage Board are mandated for the investments in minor irrigation and drinking water systems. There are no licensing or permit requirements for these works. There is also no licensing or permitting authority for hydromet infrastructure in the country.

73. For activities related to procurement of services, including training, through UNDP, according to the SBAA signed with the GOSL, taxes are not applicable. Section 7 of the Convention on the Privileges and Immunities of the United Nations provides, inter alia, that the United Nations, including its subsidiary organs, is exempt from all direct taxes, except charges for utilities services, and is exempt from customs duties and charges of a similar nature in respect of articles imported or exported for its official use. If the services are procured directly by the GOSL implementing partners, then the national procedures apply, which entail the payment of the Domestic Tax (VAT) amounting to 12.5% where applicable (e.g. venue and food for training).

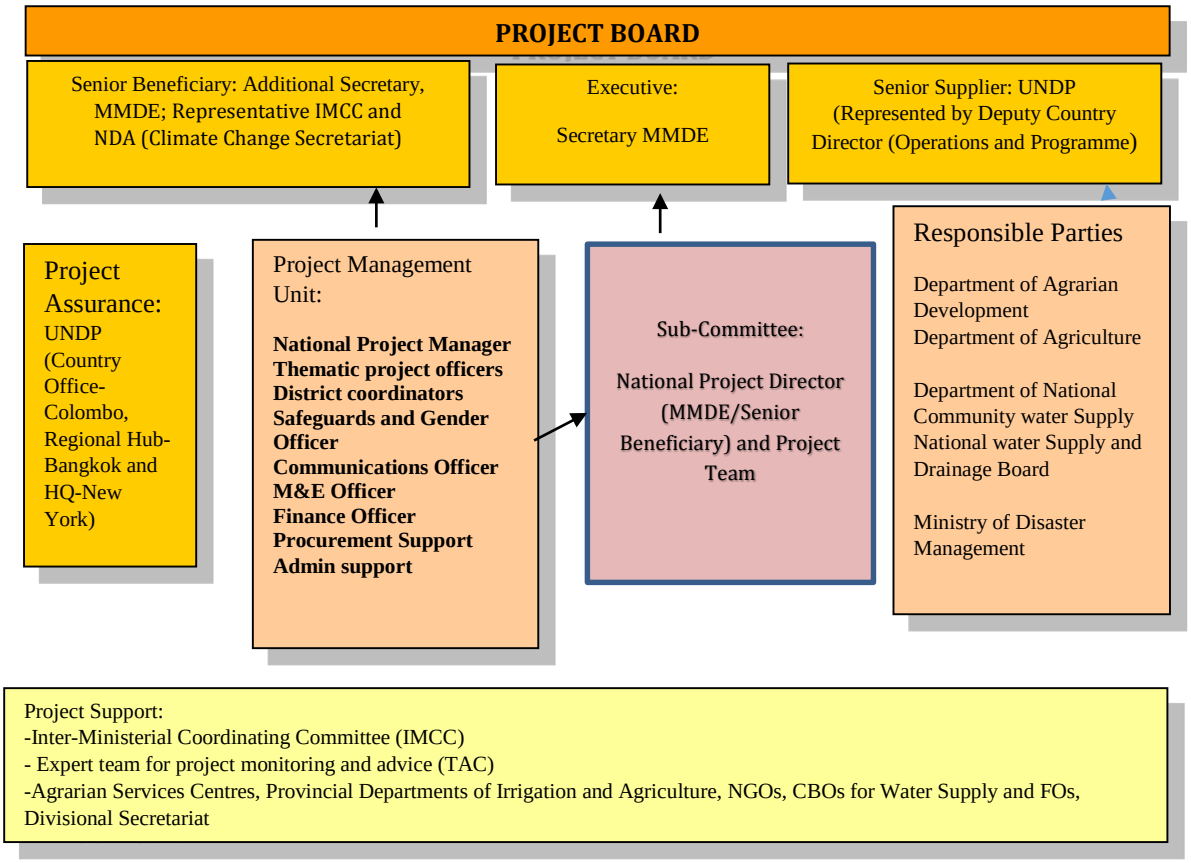
C.7. Institutional / Implementation Arrangements

74. The project will be implemented following UNDP's National Implementation Modality (NIM), according to the Standard Basic Assistance Agreement between UNDP and the Government of Sri Lanka, the Country Programme Action Plan (CPAP), and as policies and procedures outlined in the UNDP POPP. (see https://info.undp.org/global/popp/ppm/Pages/Defining-a-Project.aspx) The national executing entity - also referred to as the national 'Implementing Partner' in UNDP terminology - is required to implement the project in compliance with UNDP rules and regulations, policies and procedures (including the NIM Guidelines). In legal terms, this is ensured through the national Government's signature of the UNDP Standard Basic Assistance Agreement (SBAA), together with a UNDP project document44, which will be signed by the Implementing Partner to govern the use of the funds (once the funds are secured). The Standard Basic Assistance Agreement (SBAA) was signed with the GOSL on May 29, 1990.

[44] An example of a signed project document (cover page) is provided at http://cfapp2.undp.org/gef/documents/1/g4958/g2_19062/Prodoc Signature Page for PIMS 4958.pdf
A sample letter of agreement between IP and Responsible Party is provided at http://cfapp2.undp.org/gef/documents/1/g4710/g2_19222/2013-12-04_MoU_LDCF2_Final_Signed.pdf

75. The **Implementing Partner** for this project is Ministry of Mahaweli Development and Environment (MMDE). MMDE is accountable to UNDP for managing the project, including the monitoring and evaluation of project interventions, achieving project outcomes, and for the effective use of UNDP resources. UNDP, in agreement with the Government of Sri Lanka, will provide extensive implementation support (support to NIM) and oversight through UNDP Country Office in Sri Lanka. The following parties will enter into agreements with MMDE to assist in successfully delivering project outcomes and are directly accountable to MMDE as outlined in the terms of their agreement: Department of Agrarian Development (DAD); the Department of Agriculture (DoA); Department of National Community Water Supply (DNCWS); National Water Supply and Drainage Board (NWSDB) and Ministry of Disaster Management (MOD). UNDP has overall oversight of the IP and Responsible parties to ensure compliance with its policies and procedures.

76. The Project Management Unit, established under the MMDE will have three thematic coordinators to liaise with responsible parties for each output. The management arrangements for this project are summarized in the chart below:



77. The **Project Board** is comprised of Secretary MMDE, the National Project Director from MMDE (an Additional Secretary, Water Management Division) and the DNA (Designated National Authority, Climate Change Secretariat) and a representative of the Inter-Ministerial Coordinating Committee. As the Senior Beneficiary, the implementing partner is part of the board. Furthermore, as the Senior Supplier, UNDP provides quality assurance for the project, ensures adherence to the NIM guidelines and ensures compliance with GCF and UNDP policies and procedures. The Project Board[45] is responsible for making, by consensus, management decisions when guidance is required by the Project Manager. Project Board decisions will be made in accordance with standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition. In case a consensus cannot be reached within the Board, final decision shall rest with the UNDP (represented by the UNDP Programme Manager). The Project Board will meet twice year. A sub-committee comprising of National Project Director (MMDE/Senior Beneficiary) and Project Team will be delegated to provide more regular and periodic (monthly) guidance and implementation support to the PMU. UNDP will participate in sub-committee meetings in its oversight capacity as and when needed.

78. The **Project Manager**[46] will run the project on a day-to-day basis on behalf of MMDE within the constraints laid down by the Project Board. The Project Manager function will end when the final project terminal evaluation report and other documentation required by the GCF and UNDP has been completed and submitted to UNDP. The Project Manager is responsible for day-to-day management and decision-making for the project. The Project Manager's prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost. The annual work plan is prepared by the Project Manager and reviewed and approved by PB. However, the final approval is provided by the Regional Technical Advisor, Global Environmental Finance Unit of UNDP as part of the quality assurance role. The Project Manager is also responsible for managing and monitoring the project risks initially identified and submit new risks to the project board for consideration and decision on possible actions if required and update the status of these risks by maintaining the project risks log according to the NIM Guidelines.

79. **Project Support comprises of** an Inter-ministerial Coordinating Committee (IMCC) and a Technical Advisory Committee (TAC) to enable coordination between the key actors of this multi-sectoral project. The IMC established under the Presidential Secretariat during project preparation to provide inputs and endorsement of project design will continue as the national coordinating and monitoring body. The TAC, consisting of 4-6 paid experts will support the Project Board and Inter-Ministerial Committee. TAC members will be drawn from ex-government, private sector, academia and civil society to provide strategic guidance on the project drawing from international knowledge and best practices. At the **local cascade level,** which will be unit of planning and intervention of the project- the Agrarian Services Centres will provide the coordination and implementation support function. The Divisional Secretary, whose jurisdiction overlaps with the ASC coverage area, can play the role of project monitoring which is generally an assigned function of the office and also play a key role in the grievance redress mechanism for the project, as described in the Environmental and Social Management Plan (Annex VI).

80. Local stakeholders and community members have a key role in the implementation and monitoring of the project. During the inception phase of the project, MMDE working together with UNDP, will consult with all stakeholders, including vulnerable community members, FOs, CBOs, etc. and facilitate an understanding of the roles, functions, and responsibilities within the Project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The project Logic Framework (indicators, means of verification, assumptions) will be reviewed and the quarterly and annual plans will be refined engaging the communities from the targeted districts. The stakeholders will also be engaged during the mid-term and final evaluations to assess the progress of the project and enable adaptive project management in response to the needs and priorities of the communities.

C.8. Timetable of Project/Programme Implementation

Timetable of Project Implementation: The implementation schedule with detailed activity progress timeline and output completion, including monitoring and evaluation is provided in Annex X.

[45] Sample ToR for Project Board: http://cfapp2.undp.org/gef/documents/1/g5710/g2_20672/PIMS3603TORProjectBoard.pdf
[46] Sample ToRs for project manager: http://cfapp2.undp.org/gef/documents/1/g5710/g2_20672/PIMS3603TORProjectManager.pdf; Sample ToR for Project Administrative and Financial Assistant: http://cfapp2.undp.org/gef/documents/1/g5710/g2_20672/PIMS3603TORProjectFinanceAdmin.pdf

D.1. Value Added for GCF Involvement

81. The project is a game-changer in the following ways which are innovative and demonstrate value-add for GCF. With GCF financing:

- Irrigation water, drinking water, and agriculture are brought together to address resilience of farmers holistically, and at scale;
- An innovative approach is adopted in the design to demonstrate that both irrigation and drinking water needs can be viably met and managed;
- Potential for replication and scale (number of beneficiaries reached as well as geographical coverage) is made possible by enhancing an integrated approach to climate risk management across sectors and sub-basins by supporting climate-risk informed planning and implementation (cascade level water mgmt. committees) and district wide knowledge management and coordinated service delivery (through ASCs).

82. Without GCF involvement to complement ongoing efforts and address gaps, GoSL cannot take adequate steps to help vulnerable smallholder farmers adapt to climate-related risks and impacts to water security. GCF support enables additional investments that allow scaling up existing efforts for transformative reach and impact across the country. GCF involvement is critical to:

83. ***Addressing the financial limitations in investing in the incremental costs of climate change resilience building in Dry Zone smallholder farming systems:*** Farmers in Dry Zone had devised, and largely maintained through own resources, traditional systems for effective management of water to cultivate in a rain-deficit environment and have used these systems for centuries. However, these systems have deteriorated over the years due a number of underlying causes including degradation of watersheds, intensive cultivation, and the armed conflict. Compounding this, there has been a cycle of climate change related extreme weather events in the past ten years that severely impacted on these systems. The intensity and frequency of the hydro-meteorological hazards as a result of climate change has left farmers with very little recovery time, and hence unable to repair and resume work in village irrigation systems. Smallholder farmers, who eke out a subsistence-level livelihood and manage their food through village irrigation systems clearly have insufficient resources to invest in addressing the incremental costs of enhancing resilience of these cascade systems. With the impacts of climate change expected to worsen, the Government of Sri Lanka recognises the importance of ensuring that the water distribution systems for small holder farmers is reconstructed and enhanced in a manner that is climate change risk informed. GCF resources are critical to address the incremental costs of climate-resilient water distribution systems and management practices, building on such baseline investments as maintenance of minor irrigation systems, pesticide-free agriculture and food security to address rural under-nutrition, establishment of new drinking water treatment plants in rural areas to address chronic kidney disease, treatment and early diagnosis for CKDu, implementing water safety plans to address point source pollution of drinking water sources, drought relief and flood preparedness by government agencies such as Ministry of Agriculture, Ministry of Irrigation, Ministry of City Planning and Water Supply, Ministry of Disaster Management and Ministry of Health.

84. ***Crowding in public and private sector financing and mobilizing community-level investments:*** GCF resources will catalyse government investment in resilience building of the Dry Zone farmers through mobilization of institutional and financial support towards the proposed investments in the form of co-financing of development investments (to address non-climatic drivers as well), staff support, and O&M support. Without GCF financing, as noted in the barriers section, the financial gaps and institutional barriers, impede government investments into a holistic, integrated approach to climate-resilient, water management in the Dry Zone. GCF resources enable combining of resources to support adaptation investments, which, along with mobilization of communities, assure resilient and sustained benefits of the infrastructure. The project also supports enterprise development and mobilizes MSE and private sector investments, particularly through women producers in climate-smart agriculture, FOs and CBOs in water supply and management, agri-businesses along the value chain, and ICT platforms for climate information and advisories. GCF funding through this project will facilitate sustained public and private participation and scale-up several successful models of government-community partnerships and inter-government agency collaboration. GCF support will incentivise government agencies to invest in improved coordination, mobilize communities to invest in managing public services, encourage farmers to invest in land and in water management, and through positive externalities, incentivize private sector investments beyond the project lifetime.

85. ***Reaching the most vulnerable***: GCF funding will directly reach and support a very vulnerable group of people who were dragged deeper into a cycle of poverty, food deficits and debt due to combined impacts of remoteness, conflict, and, now, increasing climate change risks and related disasters. Many of these farmers, who used to grow their own rice, were reduced to purchasing food. Smallholder farmers living in village irrigation systems are poorer and more disconnected from government service delivery than their counterparts who have access to large-scale irrigation. They have very limited market access, poor basic infrastructure such as roads, drinking water and communication, and are also disadvantaged due to other social and health issues such as conflict and chronic disease. Such villages have very few alternate employment or income opportunities, forcing families to take tough decisions such as sending sons to the armed forces, women migrating as domestic help to oil-rich middle-eastern countries and children dropping out of school early in order to survive. In areas directly affected by conflict, families are resettling in to villages where the basin infrastructure has been neglected for years and then decimated by recent extreme weather events. In the long run, investing in village irrigation systems will have a number of spin-off benefits that impact on this baseline vulnerability as well, by creating rural enterprises and allowing young men and women to engage more in managing water related solutions and technologies. Dealing with their vulnerabilities now will preclude the need to have extensive relief and other safety nets to respond to climate change events that are expected to aggravate in the future.

86. Without GCF support, Sri Lanka will not be able to invest in the resilience of the village irrigation systems and integrated water management to guard against the increasing climate risks and impacts worsening the plight of smallholder farmers in the Dry Zone. By restoring these systems with new and improved features that increase resilience to climate change and investing in the supportive development of technologies, knowledge and institutional capacities, GCF investment will help GOSL strengthen the country's adaptive capabilities in water management. These systems could well become an international best practice in adaptation for rural smallholder farmers in other countries with similar climate change impacts.

D.2. Exit Strategy

87. The proposed project has been designed in close consultation with and involvement of relevant government agencies and technical line Departments, International agencies such as IWMI and IUCN, local NGOs, local and national private sector, Farmer Organisations and women-led CBOs in the target river basins. These consultations and discussions (detailed in Annex XIII), combined with tried and tested models for improved and resilient water management that are detailed out in Annexes 4,5 and 6 of the Feasibility Report (Annex II) provide the project with a sound approach and suite of interventions which are implemented with strong community participation and engagement of local officials. Building on this foundation, the project ensures that the investments as well as the results of the interventions are sustained beyond the project period and in the longer-term through the following elements of project design and implementation:

88. **Combining traditional knowledge and practices with climate-resilient technologies and innovative practices:** Building on traditional systems and mechanisms of village irrigation, maintenance models, and community organizational structures, such as the FOs that have buy-in and ownership amongst the smallholder farmers, provides a strong basis to integrate climate-resilient design and practices thereby enabling adoption for the long-term. Capacity building and training on climate-risk informed planning, design, and implementation of climate-resilient practices will be more effective through these locally suited and community-owned systems. Interventions in upgrading the systems through modern structural elements, increasing water capture and yield through partial de-silting and multi-use watersheds, field testing new crops and water-efficient irrigation conveyance, and improved early warning of rainfall and water level monitoring to manage gate operations will rejuvenate the existing, often dilapidated cascades and strengthen their functioning as buffers against increasing climate change variability and frequency of extreme events.

89. **Capacity building for integrated, locally owned solutions:** GCF resources will be invested in building capacities for climate-resilient, integrated solutions for irrigation and drinking water following a landscape or ecosystem approach based on sub-river basins (cascade systems). The project promotes institutional planning and coordination across government officials and communities to overcome the sectoral and piecemeal approach to water management that had been adopted in the past. Project outputs will also contribute to enhancing organisational capacity of farmers to plan for and implement climate-risk informed local water management solutions, adopt technologies and systems for climate-smart agricultural production and safe drinking water, and integrate climate information and advisories for water management ensuring their financial and human resource viability post-project. In designing such solutions, the

approach is to strongly engage communities at every level of planning and execution. By doing so, the project will not only ensure that the investments respond to beneficiary needs but also ensure that community organisations, including youth and women's groups, will have sufficient technical and financial capacity to keep improving system design and operations, even as climate variability increases and seasons become more unpredictable.

90. **Co-investments by government institutions and communities**: The project leverages domestic co-financing in the form of government financing that supports baseline funding of the proposed interventions as well as co-mingling of resources to support project implementation. Co investments (totalling USD 14M) for the project include investments from DAD towards village irrigation systems (VIS) rehabilitation and O&M in the project targeted river basins and districts and upgrading of ASCs; DOA towards development and dissemination of climate resilient agriculture packages and the co-development of tailored agricultural advisories; DNCWS to establish and manage and support O&M of community water supply systems including the training of CBOs; NWSDB to support design and development of community water supply schemes and water purification and filtration systems, water quality testing and monitoring, and O&M of these investments; and MOD to support flood and drought response for agriculture and water management in project targeted districts and O&M of observational networks. The project will also leverage considerable domestic/community co-investment into the proposed activities. Drinking water solutions and farmer field trials of climate smart crops and agro-technology will be implemented with community co-investments that can range from 15-30% of the capital cost (please see Technical Feasibility Report sections 5.4 and 5.7). Maintenance of village irrigation systems will be supported by FOs' savings and collections improved through project interventions. Overall, domestic financing strengthens commitment and ownership in implementation of the project and enable these actors to sustain the investments beyond project duration.

91. **Ex-post plan for Operations and Maintenance of observing equipment:** An O&M plan (project and for post-project O&M) including the budgeting for the human and financial resources required for O&M for the project investments is presented in the Annex XIII. The plan reflects local ownership and commitment for the long-term sustainability of the project activities and outcomes. The costs of developing a long-term strategy for O&M, is provided for in the first two years, and the strategy will be reassessed towards project completion (final two years). GCF resources will finance and leverage financing to support the human and technical resources required for O&M initially, with a decreasing contribution towards the end of the project lifetime, after which domestic financing (from the budgets of designated authorities as reflected in the co-financing letters and local communities including FOs and CBOs) will continue to support O&M. Project will also support FOs managing VIS to supplement their reserve funds with income from food fishery in the upgraded VIS. Project also builds in contingency funds for unforeseen events (e.g. climate shocks) and includes a provision for spare parts to last beyond the lifetime of the project. The farmers traditionally manage village irrigation systems and the project will improve the capacity of FOs (development of O&M and financing plans, O&M manuals, technical guidelines for water management, SOPs, initial seed fund, etc.) to function more efficiently. Supported by enhanced incomes from agriculture, it is envisaged that FO contribution would also improve. The CBOs managing drinking water supply systems will be capacitated to sustain the maintenance of community water supply facilities through initial support for stock of spare parts, training in maintenance and financial management, cascade level source protection plans, training of skilled labor, etc. The CBOs managing the advanced purification and filtration systems will cover the O&M costs through the incomes generated. For O&M of hydro-agro-met network, project supports maintenance of the equipment for a limited period after the warranty periods and training of government officials and local communities along with domestic financing is expected for post-project O&M.

92. **Promoting private sector participation through enterprise development and enabling environment:** The project will promote entrepreneurship among communities to deliver a suite of new technologies for resilient agriculture, drinking water and climate information. It will build capacity of young men and women in these rural areas to engage in managing these ventures as enterprises in the village. The engagement of women in FOs and as interlocutors between private sector markets for ecologically produced, climate smart crops will increase livelihood options and income sources for women entrepreneurs in villages. Many rural water supply schemes already provide space for women-led CBOs to manage these schemes as local social enterprises. The project will also introduce IT-based climate information sharing platforms that can be developed and managed by local youth. Furthermore, the strengthened environment through enhanced institutional coordination (SOPs, water management plans, training of government agencies on planning and implementation), information and data sharing (incl. on EWs, forecasting, and advisories), and market linkages will

enable and incentivize private sector investment beyond the project life time. For instance, strengthened value-chains for agriculture, improved ecosystems, enhanced climate information can spur private sector investments in agro-processing, tourism and ecosystem services, insurance sector, etc. In addition, the project will strengthen the environment for engagement of microcredit institutions and banks as village level agri-businesses scale-up. Since there are many NGOs working with MFIs, the project resources will be invested in strengthening the demand and capacities of farmers and MSEs to engage with the MFIs. The project will strengthen the capacity of farmers and micro enterprises through awareness, business development, technology transfer, improved income generation and facilitation of market linkages. Project will also strengthen the use and interpretation of climate information for effective business planning benefiting both farmers/micro enterprises as well as microcredit institutions.

E.1. Impact Potential

Potential of the project/programme to contribute to the achievement of the Fund's objectives and result areas

E.1.1. Mitigation / adaptation impact potential

93. The project incorporates lessons learned and best practices from several successful international efforts in order to enable a transformative impact through the improvement of community irrigation water infrastructure and associated agricultural practices as well as a scale up of decentralized drinking water systems and effective Early Warning (EW), forecasting and water management systems to enhance the resilience of smallholder farmer livelihoods to climate-related impacts. Key lessons and success factors drawn include: i) upgrading village irrigation systems (small-scale rainwater storage reservoirs and related watersheds) in India[47,48]; ii) scaling up climate-smart agricultural practices in Vietnam[49]; iii) enhancing decentralized water supply and management solutions to provide safe drinking water to vulnerable communities in Bangladesh[50]; iv) Strengthening early warning, forecasting and water management systems to enhance the adaptive capacity of smallholder farmers to drought and floods in India.[51]

94. The project will advance climate-resilient sustainable development of Sri Lanka by ensuring adaptation of its smallholder farmers in the Dry Zone (agricultural heartland of the country) to climate risks and impacts. It will contribute to the Fund Level Impacts of Increased resilience of health and wellbeing, and food and water security and increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions. The climate-impact potential derives from the fact that GCF funding will support an integrated approach to strengthening the resilience of smallholder farmers in the Dry Zone through three inter-related outputs contributing to climate resilient water and agricultural management. Please refer to the Project Logframe and Economic Analysis (Annex XII) for the assumptions and estimates of the impact potential:

- The project will directly benefit 770,500 (about 70% of the vulnerable population in the seven districts) people in the three river basins of whom about 392,000 are female. The direct beneficiaries are a combination of the direct beneficiaries of the irrigation and agriculture investments, drinking water investments, and EWs and forecasting investments, not counting the overlapping populations. The project will indirectly benefit about 1,179,000 more people of whom about 601,000 are female, with agriculture planning and water management advisories in the districts associated with the targeted river basins. Together, the total beneficiaries (approx. 1.9M) account for 57% of the population across the seven districts. This is about 9.6% of the population of the country.
- Of the total direct beneficiary population, 520,000 smallholder farmers (254,800 males and 265,200 females) in the three river basins benefit through the adoption of diversified, climate resilient livelihood options related to climate-smart agriculture. (Fund Level impact, Result Area A1.0)
- Related to Result Area A2.0, the project also benefits about 517,800 people who receive year round and safe drinking water (through direct investments in drinking water systems) and whose drinking water supply systems are protected and sustained through flood advisories disseminated through cascade water management committees and through SMS. This includes 445,500 beneficiaries of flood advisories under Output 3 which subsumes the 144,700 people benefiting from drinking water systems. An additional 72,300 benefit from drinking water systems outside the river basins targeting high incidence CKDu areas. Please note that combined target populations from Result Area 1 and 2 does not add up to (and exceeds) total direct beneficiaries as these numbers both count farmers that benefit from CSA and water advisories. The total direct beneficiary number removes this duplication.
- The project can potentially result in an annual benefit of 8 million USD per annum to the agricultural sector and about 2 million USD per annum of labor hours saved with increase access to drinking water.

[47] Fisheries & Animal Resources Development Department website, Government of Odisha. "Orissa Community Tank Management Project". Retrieved from: http://fardodisha.gov.in/?q=node/137

[48] Asian Development Bank (2006). "Rehabilitation and Management of Tanks in India: A Study of Select States". Retrieved from: https://openaccess.adb.org/bitstream/handle/11540/5073/rehabiliation-management-tanks.pdf?sequence=1

95. The project outcome will strengthen the adaptive capacity and reduce exposure of smallholder farmers in the Dry Zone to climate risks posed by extreme events and variability through strengthened village irrigation infrastructure and capacities of smallholder farmers for water management and climate-resilient agriculture; improved access to safe and reliable drinking water through supply systems able to withstand climate change and variability; and strengthened capacities of Dry Zone farmers to use early warning and climate information for water management. *The project directly benefits about 392,000 women and 377,000 men through improved strategies and activities for water and agriculture to respond to climate variability and change.*

96. The project will result in strengthened village irrigation infrastructure and capacities of smallholder farmers for water management and climate-resilient agriculture. It enhances the cropping intensity (CI<1.6) of about 9750 ha of land under minor irrigation under targeted cascades. It enables dissemination and adoption of climate resilient agriculture technology packages to about 520,000 smallholder farmers living in the targeted river basins. It will, particularly, benefit about 16,677 women farmers through implementation of climate resilient agriculture technologies and practices and market linkages. In the near-term, project interventions will improve access and availability of water for irrigation and domestic consumption in the 325 cascades. Over time, these solutions will also contribute to the recharge of ground water and improve the quality of water, increasing the availability of safe water for domestic consumption.

97. The project will enhance the adaptive capacity and resilience of vulnerable populations through improved access to safe and reliable drinking water through supply systems able to withstand climate change and variability. The project will benefit approximately 217,000 women, men and children with improved and year-round access to safe drinking water, and about 20,000 women with employment and livelihoods by building their capacities to manage community water solutions.

98. The project reduces exposure to climate risks posed by extreme events and variability through the enhanced capacity of farmers to use early warning and climate information for water management and agricultural planning. Timely and locally relevant weather/seasonal weather forecasts and agricultural advisories will benefit 520,000 people targeted through ASCs and improved flood management through early warnings will benefit approximately 445,500 people living in the targeted river basins. These include families that engage in agriculture and families that depend on rural water supply schemes based on village irrigation systems who will manage water allocations efficiently based on timely, accurate climate and weather information dissemination.

E.1.2. Key impact potential indicator

Provide specific numerical values for the indicators below.

GCF core indicators	*Expected tonnes of carbon dioxide equivalent (t CO_2 eq) to be reduced or avoided (Mitigation only)*	*Annual*	
		Lifetime	
	• *Expected total number of direct and indirect beneficiaries, disaggregated by*	*Total*	770,500 direct beneficiaries and 1,179,874 indirect beneficiaries expected (of which 51% are female)

[49] CGIAR Research Program on Climate Change, Agriculture and Food Security and the Technical Centre for Agricultural and Rural Cooperation (2013). "Climate-smart agriculture success stories from farming communities around the world". Retrieved from: https://cgspace.cgiar.org/rest/bitstreams/24750/retrieve

[50] The World Bank website. "Safe Water for Rural Population in Bangladesh: Bangladesh Rural Water Supply and Sanitation Project (BRWSSP) Fact Sheet". Retrieved from: http://www.worldbank.org/en/news/feature/2016/03/15/safe-water-for-rural-population-in-bangladesh-bangladesh-rural-water-supply-and-sanitation-project-brwssp-fact-sheet

[51] K. K. Singh (2011). "Weather Forecasting and Agromet Advisory Services in India". Retrieved from: http://www.iasri.res.in/ebook/TEFCPI_sampling/WEATHER%20FORECASTING%20AND%20AGROMET%20ADVISORY%20SERVICES%20IN%20INDIA.pdf

	gender (reduced vulnerability or increased resilience); • *Number of beneficiaries relative to total population, disaggregated by gender (adaptation only)*	*Percentage (%)*	9.6%[52]
Other relevant indicators	Expected strengthening of adaptive capacity and reduced exposure to climate risks: Indicator: Extent to which vulnerable households, communities and businesses use improved strategies and activities to respond to climate variability and climate change: 704,440 persons		

[52] The vulnerable populations (indicated by poverty, health, under-nutrition, and disaster impact indicators - UNDP Sri Lanka 2012: National Human Development Report *Regional Disparities in Human Development*) within the 7 districts are estimated to be about 30%, with the district population estimated at 3.4 million. Of the vulnerable population, project benefits about 75%. Including the indirect beneficiaries, the project benefits about 57% of the total district populations across the 7 districts.

99. The total number of direct beneficiaries (in targeted districts) has been calculated as an aggregate of the estimate of the direct beneficiaries from the farmer and non-farmer populations in targeted river basins who benefit from the improved water (irrigation and drinking water) and agricultural management as well as from the EWs and forecasting information. The total direct beneficiary number is arrived at by combining the direct beneficiaries in the three river basins under the three outputs, while avoiding overlaps. The estimates of populations, the beneficiary estimates from the three Outputs, and the total direct beneficiary calculation is provided below:

- Population estimates and sources:
  a. Country population: 20,271,464 (Department of Census and Statistics (DCS))
  b. Rural population of the seven targeted districts: 3,423,974 (80% of total district population, Department of census and statistics)
  c. Population of three river basins: 925,000 (calculated based on DCS and GIS data)
  d. Farmer population is around 60%. (DCS)
- Output 1 beneficiaries: This number is calculated on the assumption 3250 VIS in the three river basins, with 40 families under each irrigation system, and 4 members per family (DAD and DCS statistics). Therefore, the total number of small holder farmers working in village irrigation systems in the three river basins (**520,000**) will have access to climate resilient agriculture packages disseminated through the 77 ASCs. (each serving about 6753 farmers)
- Output 2: There will be **217,000** (includes beneficiaries of advanced purification and filtration systems: 131,000 (70 large units serving 112,000 members in 400 HHs, 55 serving 19,000 people in schools and hospitals); CWSS: 70,000 (35 units serving 500 HHs); and RWH: 16,000 (4000 serving one HH)) people benefitting from the different drinking water interventions that the project will invest in linked to the village irrigation systems. Of these, geographically (See Annex VIII, Map of the project), 70% of the systems (and therefore 144,700 beneficiaries) will be located within the 3 river basins and remaining 30% of them or 72,300 of these beneficiaries will be located outside the river basin boundaries but within the associated 07 districts, targeting divisions with high vulnerability to CKDu, salinity and poverty.
- Output 3: The Cascade Level Committees are the primary target for flood advisories for water management. Each cascade level water committee will reach around 4800 people (each cascade= 12 VIS/ each VIS=100 familiesx4 members) comprising of farmers benefitting from village irrigation systems, farmers working in non-irrigated lands and non-farming households. The project will form cascade water management committees bringing together the local-level representatives of drinking water supply systems and Farmer Organisations in 50 cascades. This is a total of 240,000 people directly reached through such committees. Of the remaining river basin population (925,000-240,000=685000), we also count those people benefiting from SMS service, Given the penetration of mobile phones according to statistics and recent survey (http://www.tradingeconomics.com/sri-lanka/mobile-cellular-subscriptions-per-100-people-wb-data.html and http://dbsjeyaraj.com/dbsj/ archives/ 20172) is round 40-50%, we use a conservative estimate of 30% as actually receiving the SMS advisories. Therefore, this amounts to 205,500. The total number of beneficiaries from water related EWs and advisories, **445500**, is a sum of those reached by cascade level committees and SMS.
- Total Direct Beneficiaries: The target combines the direct beneficiaries in the three river basins under the three outputs above, avoiding overlaps. This was calculated using: (i) the total number of beneficiaries reached under Output 1 which is 520,000 (which subsumes 144700 of the 217000 beneficiaries from Output and overlaps with the 520,000 beneficiaries of agricultural advisories under Output 3); (ii) the additional drinking water beneficiaries outside river basin (72,300) not counted under Output 1; and (iii) the additional number of river basin population receiving flood advisories through cascade level water committees and SMS and not counted under Output 1. This would be the non-farming population of the total reached under Output 3 which is about 40% of 445,500 (178,200). The total number of direct beneficiaries is, therefore, **770,500** (520,000+72,300+178,200).

100. The total number of indirect beneficiaries was derived as follows: Total rural population in 7 districts is 3,423,974; total population in targeted 3 river basins is 925,000. Therefore, the base figure for indirect beneficiaries is those people outside the river basins, 2,498,974 (3,423,974-925,000). Of these: 1) 614545 indirect beneficiaries, farmers, will benefit under Output 1 based on assumptions that training on CSA and interpretation and use of drought advisories will be adopted by other 91 ASCs in the seven target district, outside the river basins. Each ASC targets 6753 farmers based on DAD statistics and 2) Of the remaining population of potential indirect beneficiaries, which is

1,884,429 (2,498,974-614545), we count the population receiving flood advisories for water management through the SMS services. Assuming 30% penetration of mobile services (see footnote 99 for basis of this assumption), we estimate 30% of 1,884,420 (565,328) will receive SMS based early warnings. Therefore, total indirect beneficiaries is **1,179,874**. (614545 plus 563,328)

101. The direct estimates are conservative compared to the estimates of existing efforts nationally and internationally (See Impact Potential section for discussion on impact of comparable interventions). For instance, the estimates (i) limit the reach of agricultural benefit to the river basins (not the entire district even though ASCs are trained); (ii) limit the beneficiaries of the water management and planning to cascade systems and not entire river basins; and (iii) use a conservative estimate of 30% penetration of mobile phones for use of SMS advisories.

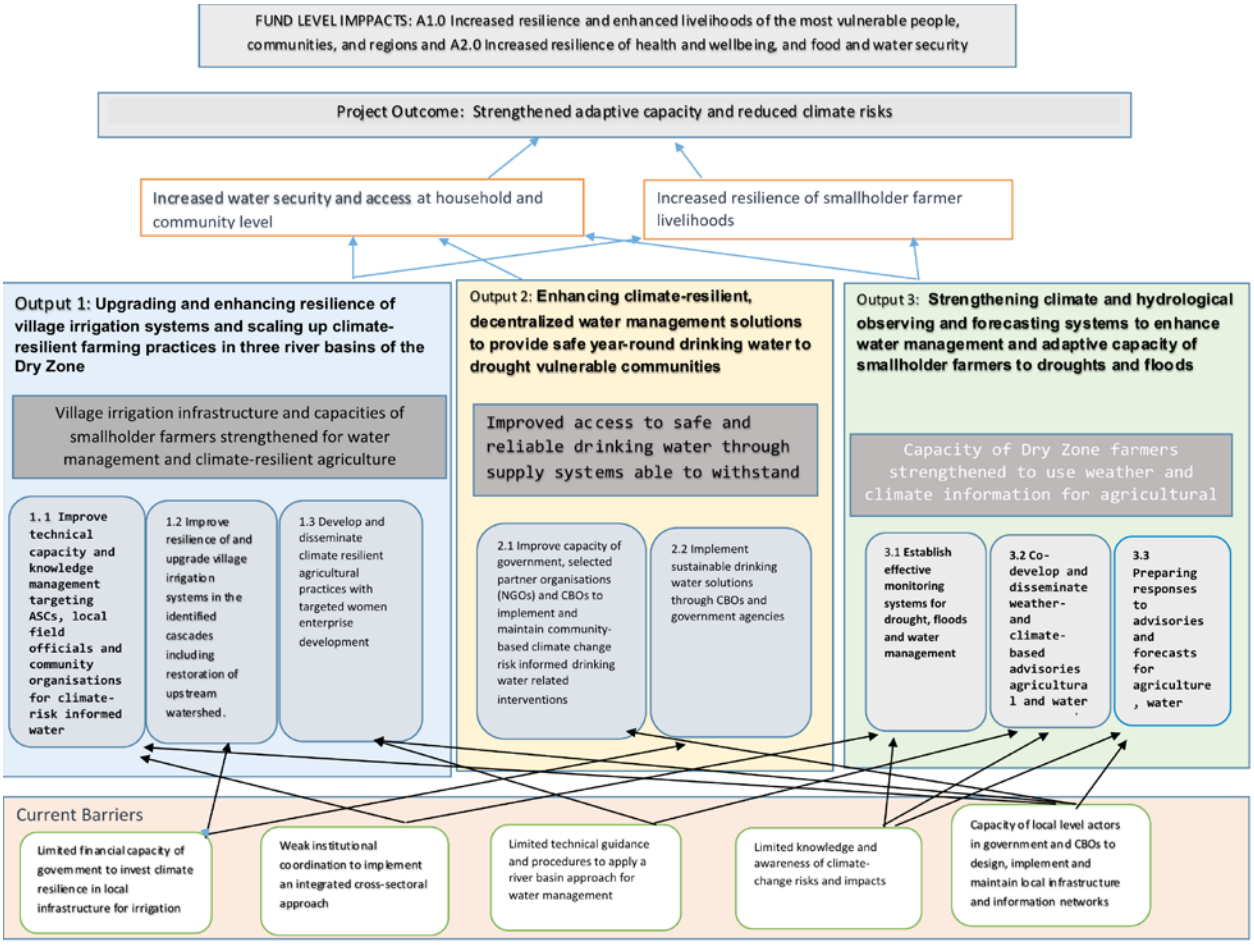
E.2. Paradigm Shift Potential

DEGREE TO WHICH THE PROPOSED ACTIVITY CAN CATALYZE IMPACT BEYOND A ONE-OFF PROJECT/PROGRAMME INVESTMENT

E.2.1. Potential for scaling up and replication (Provide a numerical multiple and supporting rationale)

102. The paradigm shift for the project lies in the project's integrated, holistic approach to enhancing water management through the interconnected elements of irrigation systems and farming practices, drinking water supply and management. It is the first time that an integrated approach to water management is being advanced in the country *incorporating climate change concerns*, understanding linkages across river basins/sub-river basins, and including multiple uses of water. The project sets standards and precedents for future river basin management planning, including the selection of river basins and VIS cascades based on adaptation potential and vulnerability, using the linkages among domestic water needs, livelihood needs, information needs and responding to community requirements in an integrated manner.

103. The theory of change articulated below illustrates how each of the three outputs of the proposed project contribute to the long-term objective and how the resulting project impacts can be sustained, replicated and scaled to contribute to climate-resilient development in Sri Lanka. Through integration of the specific elements described in the Exit Strategy into the project design and implementation, conditions are created that lead to sustained impacts and potential for scale up.



104. Output 1 invests in the restoration and rehabilitation of village tank cascade systems and scale up of climate-resilient farming practices. The project will facilitate dissemination of such agricultural practices through both enhanced technical capacity of farmers and facilitation of market linkages to sustain these practices. The project assures long-term sustainability and potential for scale up and replication of these investments through a participatory approach and capacity building targeting Farmer Organisations, field officers of agriculture-related government institutions, private sector and local NGOs, as well as knowledge management through the ASCs. Output 2 of the project will improve investments and strengthen institutional capacities to deal with unavailability of safe drinking water by scaling up solutions including rainwater harvesting and community-managed purification systems, which were successfully demonstrated in Sri Lanka. The project will promote participatory and entrepreneurial approaches for sustainability of drinking water supply and management solutions, lending these investments for potential to scale up across the targeted districts as well as to replicate drinking water solutions to other vulnerable parts of the country. Output 3 will introduce technology and create systems that allow farmers and communities to access and actively participate in generating and sharing information for timely and coordinated operation of irrigation and drinking water systems and agriculture planning. At the national level, tailored forecast products and advisories will be developed to support decision-making. GCF funding will also strengthen ASCs in these areas to produce participatory advisories based on climatic forecasts and climate resilient agriculture options, using farmer knowledge and experience. Training of trainers conducted in Outputs 1 and 3 will enable the approach to be immediately replicated in and adopted by Agrarian Services Centres in the district but outside the river basins. Overall, the project's integrated approach can be scaled up in at least 08 other Dry Zone districts with vulnerable small holder farmers through 192 Agrarian Services Centres delivering support for VIS rehabilitation and climate resilient agriculture; and SMS-based flood advisories to protect drinking water and irrigation infrastructures.

105. Through these output activities, the project establishes pathways for future replication and scale.

- The integrated, cascade-level approach to upgrading village irrigation systems and water management allows for future replication and scale to both adjacent cascades within the targeted basins as well to other identifiable vulnerable river basins in the country. The integrated approach to cascade water management planning and VIS upgrading has the potential to be up-scaled five (x5) times the initial number of 30 cascades within the targeted river basins. The training of trainers for district/provincial officers and ASC officers would support future replication within the three river basins. This approach can then be replicated to five (05) other vulnerable river basins in the Dry Zone with large populations of smallholder farmers reaching up to 25 times its initial impact
- The climate resilient agriculture can be immediately up-scaled to 91 other ASCs using district officers trained reaching 614545 farmers, and doubling (x2) the initial impact. There is potential to replicate climate resilient agro-technology packages and tailored agriculture advisories in 8 other Dry Zone districts through 192 ASCs reaching 1,296,623 small holder farmers, creating up to four times (x4) replication potential of the initial beneficiaries. This replication is supported by project activities such as investments in developing climate resilient agriculture packages co-financed training programmes conducted by DOA for Provincial and ASC staff for dissemination of climate smart agro technology and crop selection.
- The cascade water management plans and water source protection plans/committees that are being introduced through the project for 50 cascades in Outputs 1 and 2 can be replicated up to five times (x5) the initial target in the river basins themselves. Upscaling the community-based model for drinking water can benefit up to twice (x2) the initial beneficiaries in the target cascades (144,600 or a third of 217,000) themselves and could be replicated by at least five times (x5) in the river basins to benefit additional vulnerable communities without access to safe drinking water creating ten times (x10) potential beneficiaries (or 1,446,000) through training of officials and CBOs, and exchange visits for knowledge transfer through the project.
- Dissemination of flood advisories for water management through SMS is targeted to 30% of the rural population of the districts. The SMS- and media based dissemination has the potential, depending on coverage to potentially can reach all the rural population in the 7 target districts associated with the river basins which is 3,423,973 people (x3 of the initial target) all of whom depend on either irrigation or rural drinking water supply schemes. Replicating this flood advisory can potentially double this benefit (x2) benefiting as many as 3,213,112 rural people in 8 other Dry Zone districts across the country.

106. Overall, the project's cascade based approach to water management has potential to be replicated in other vulnerable, Dry Zone river basins and the climate resilient agriculture practices and advisories for flood management in all Dry Zone districts. The cascade approach to water management including drinking water source protection committees can be replicated in at least 5 other river basins for up to 25 times its initial impact reaching 796800[53] farmer families or 3,187,200 people. This accounts for as much as 44% of the total Dry Zone population of 7,245,000.[54] The climate smart agriculture and advisories related to drought and flood have the potential to be replicated in 8 other Dry Zone districts in the country through ASCs and mobile networks reaching the 6,600,000 people[55] in 15 districts, which accounts for over 90% of the total Dry Zone population of 7,245,000.

E.2.2. Potential for knowledge and learning

107. The project facilitates improved knowledge generation, creation and sharing for collective and iterative learning among farmers, technical agencies and their field officers. It will generate substantive knowledge on climate-related aspects of water management, and on collaborative and participative multi-stakeholder processes. By aligning local knowledge of village irrigation systems, farming practices, drinking water management and understanding of weather patterns with scientific knowledge that takes into account climate information and understanding of new technologies, the project supports co-creation of climate resilient technical knowledge appropriate to the local context. The project will develop a number of knowledge products including guidelines for integrated water resources planning, O&M manual for upkeep of village irrigation systems and SOPs for reservoir gate operations. These products complement training of FOs and other community organizations to evaluate risks and design locally suited adaptation measures. Knowledge generation and learning will address technical and infrastructure issues; support the production of climate resilient and organic/low-input/drought resistant crops; and enhance capacities of local communities and government agencies to operate and maintain technologies and sustain practices beyond the project lifetime.

108. The nodal point of the project's knowledge generation and learning activities will be the ASCs maintained by DAD as community services centers. These centers are located at sub-district level and house a number of sectoral agencies providing agriculture related information and services in traditionally segmented approach. The project will invest in strengthening ASCs to provide services, facilitate community-managed initiatives (e.g. water provision for agriculture and for drinking) and be the channel for scientific knowledge from outside to add value to local knowledge (and vice versa). ASCs will also facilitate the coordination of the different institutional inputs into the project, enabling the different state and non-state agencies to work together with the local technical officers, field extension services and community organizations such as FOs, women's groups, private sector and NGOs. The project will also support sharing of lessons learned and best practices through the continuous monitoring and evaluation of the project. The M&E plan (Section H.2) will include provision for generation of lessons learned and best practices (reports, publications, and other communication and knowledge products for various media) to not only support adaptive project management but also to inform learning across national/sub-national/community levels within Sri Lanka and regionally.

E.2.3. Contribution to the creation of an enabling environment

[53] This assumes that the approach is replicated in 83 (16.6 cascades in each RB*5) cascades in each river basin (83x3 initial RBs +83*5 new RBs) totaling 664 cascades in eight riverbasins. Each cascade has an estimated population of 1200 families or 4000 people. Both farmers and non-farmers benefit from the integrated water management approach.
[54] Central Bank of Sri Lanka 2013. Economic and Social Statistics
[55] 3,423,973+3,213,112 (total for 15 districts)

Enabling effective and sustained participation of private and public sector actors:

109. The project invests in improved technical capacity and knowledge of government agencies and community organizations on integrated water management and enhances coordination among the stakeholders. The project builds on existing experiences of community participation and strengthens a range of rural CBOs and local enterprise development. Sustained participation of various actors is ensured through training and investments including for farmer and youth organizations to deliver on restoring and maintaining resilient irrigation infrastructure, women producers as MSEs to carry out climate-smart agriculture and leverage markets, women-led CBOs as social enterprises to manage community water supply systems, and communities in co-developing and adopting seasonal forecasting and early warning systems. Focus on enterprise development water management systems enables viable business models and sustained ownership of the local communities in long-term water security. The project also proposes innovative partnerships with private sector to determine market-oriented climate smart crops and develop marketing linkages through the cascade-level farmer committees or youth-led enterprises. Furthermore, the strengthened environment through enhanced institutional coordination (SOPs, water management plans, training of government agencies on planning and implementation), information and data sharing (incl. on EWs, forecasting, and advisories), and market linkages including engagement of upstream value-chain actors and financial intermediaries will enable and incentivize private sector investment, beyond the project life time.

110. The paradigm shift of the project hinges on an integrated approach and the project promotes am enabling environment for such integration across many levels. The project addresses the 'business-as-usual' and fragmented nature of local level decision making in multiple ways across agencies (horizontal) and at various levels (vertical):

- Horizontal coordination: The project ensures cross-sectoral integration through inter-linked investments and project implementation arrangements to build capacities long-term.
    - The project build capacities to support integration of irrigation, drinking water, agriculture, and climate information in a holistic manner to address resilience of dry zone farmers.
    - The inter-linked activities for design, planning, and implementation brings together the key agencies across these sectors.
    - Sectoral plans of these various agencies are implemented sub-nationally, locally in an integrated manner through water management plans, SOPs, and targeted capacity building activities that will sustain the coordination beyond the project lifetime.
    - Implementation arrangements and the project management framework also advance institutional coordination by creating best practices through this project.
- Vertical coordination: The project links local, community level water management to cascade level and district level planning that support implementation of various national level sectoral plans. Coordination works from ground-up to advance the integrated approach.
    - Formation of cascade level water management committees bringing together farmers (irrigation interest) and other users (drinking water CBOs) to manage the local water resources
    - Strengthening the Agrarian Service Centres at the local level to become a pivot for information, knowledge and coordinated response of government service delivery for agriculture and marketing

- SOPs for climate and weather-related information sharing and transmission from farmer organization to cascade committee to ASC to district/national level
- Project progress monitoring through established mechanisms such as divisional and district development committees

Inter-Ministerial Committee at the National Level with representation from national level agencies and provincial councils.

Innovation, market development, and transformation

111. *Innovation:* The project's adoption of an *integrated sub-basin level ecosystem-based approach* to Dry Zone water management is an innovation that could transform the current sectoral approach to investments in agriculture, drinking water and irrigation in the Dry Zone. The project design moves away from the conventional, compartmentalized functioning of government agencies, and brings together the different agencies to provide an integrated solution at a sub-basin or cascade level. The project approach is innovative in the following ways:

- Irrigation water, drinking water, and agriculture are **brought together to address resilience** of farmers holistically at scale;
- Enabling **both irrigation and drinking water needs to be viably met and managed through cascade rehabilitation** which will increase water yield in the system and manage demand by crop diversification;
- Advancing **cascade-wide approach incorporating climate risks** for water management and agriculture;
- Enabling scale by enhancing an integrated approach to climate risk management across sectors and sub-basins by **supporting climate-risk informed planning and implementation** (cascade level water mgmt. committees) and district wide **knowledge management and coordinated service delivery (through ASCs**)

112. The project will also promote development and adoption of *innovative adaptation technologies and practices* for enhancing water management and agricultural livelihoods. For instance, the project will upgrade traditional cascades to be climate-resilient through design changes such as strengthened bunds; introduce climate-resilient crops and low cost methods of drip irrigation; scale of practice of inputs selection through soil testing; and apply innovating drinking water solutions such as roof-top rainwater harvesting and advanced water purification and filtration systems.

113. Implementation of this project will introduce technical guidelines on adopting a basin-approach and climate risk management for water security driving national and provincial planning agencies to a new way of planning and delivering rural development. The project also invests in innovative information gathering, knowledge generation and dissemination practices involving ASCs, communities, and technical agencies. The project envisages developing a data gathering and sharing smart phone application to communicate weather and water level information to develop basin-level climate information and forecasting capacities.

114. *Market development and transformation:* The project will work with farmer organizations and producer groups (women and youth) to create sustainable and fair markets for agro products developed and promoted as climate smart crops. The project will engage with established marketing networks in the provinces and local regions, but also work towards creating niche markets for ecologically produced and climate resistant new crops/agro technologies. Local seed production and storage will be encouraged to overcome the dependence on external seed production. The products generated by the project such as the climate smart agro-technology packages and tailored agricultural and water advisories can spur market development engaging small-scale farmer enterprises, technology providers, agri-businesses, and service providers in sectors such as agriculture, crop insurance, local tourism, and transport. Through focus on market linkages and enterprise development in climate-smart agriculture and water supply and management systems, the project creates sustained and transformative impact empowering communities towards resilience, well-being, food security and growth. The project is also transformative in its empowerment of women as key change agents for climate change adaptation in these vulnerable communities. Project interventions towards resilience building include specific strategies to target female-headed households considering gender-differentiated roles and responsibilities in water resource management and agricultural livelihoods. Project empowers women through enhanced access and control over water supply and management as well as increased income generating opportunities related to agricultural production and community water supply schemes.

E.2.4. Contribution to regulatory framework and policies

115. GOSL has committed to Sustainable Development Goals, including the goals of ending poverty, achieving food security and promoting sustainable agriculture, reducing inequality and promoting inclusive societies. The project contributes to these goals through the enhanced resilience of VIS and adoption of climate-resilient agricultural practices that increase productivity and food security, improved access to safe drinking water reducing burden of labour (in particular on women) and illness, and empowering of local communities, particularly women and youth, with improved decision making, planning, and coping capacities against climate-risks and impacts. The GOSL has a clear vision of developing rural economies and recognizes that smallholder farmers, hovering on or just above the poverty line and forming the backbone of these rural economies, need to have livelihood security and be prevented from falling back into poverty. Recognizing that climate change can severely constrain the productive capacities of small farmers, especially in the Dry Zone, who are Sri Lanka's key food producers, GOSL in its INDC committed to minimizing climate change impacts on food security focusing on water sector as a crucial cross-cutting issue.

116. The integrated approach to effective water management from the perspective of agriculture, drinking use, floods and drought preparedness will be a model for partnership and collaboration between stakeholders and will engage national and provincial governments through the inter-ministerial and basin-level committees (see implementing arrangements). The approach can create a framework for government engagement with civil society to deliver essential public services to remote and rural populations. The project responds to a number of government policies and strategies as outlined in the Agricultural Policy, National Rainwater Harvesting Policy, National Climate Change Policy, National Climate Change Adaptation Strategy and Action Plan, and the Sri Lanka Comprehensive Disaster Management Programme. The proposed project makes an important contribution to Sri Lanka's national policies on land management, agriculture, water resources, disaster management and climate change. The knowledge and technical products such as technical guidelines, SOPs, and water management plans and capacity building activities such as training of technical agencies and local level organizations on climate-resilient technologies and practices make significant contribution to the implementation of the National Adaptation Plan, National Climate Change Adaptation strategy and the National Disaster Mitigation Strategy. Project implementation can also provide insights into the ongoing revisions of the Flood Ordinance of 1924.

E.3. Sustainable Development Potential

Wider benefits and priorities

E.3.1. Environmental, social and economic co-benefits, including gender-sensitive development impact

Economic benefits

118. The project will yield many economic benefits, at the micro and macro levels, as well as direct and indirect. The project will enhance the agricultural production of 130,000 smallholder farmer families (520,000 people) and increase productivity (accruing a benefit of USD 8 million per year to the agricultural sector) as well as incomes in three river basins through improved access to irrigation, adoption of climate resilient cropping patterns, and market linkages. Improved access to safe and reliable drinking water can result in about 2M USD in labour hours saved along with benefits to reduction of health costs and expenditures. In addition, the community-based enterprise development will create employment for around 20,000 women and men in the targeted communities – in managing drinking water systems, developing climate-smart agriculture market linkages and value-chains, and in working with the farmer organisations on early warnings and seasonal forecasting. There will also be some indirect employment opportunities created as the local economy is stimulated by the activities of the project, such as tank infrastructure rehabilitation, crop value addition (milling, transporting) and the building of rainwater harvesting infrastructure by local masons.

119. There will be macro level indirect economic benefits derived by the contribution to food security, self-sufficiency in the staple rice, and production of local fruits vegetables and grains, thus saving on potential imports. Reducing the vulnerability of the farming households will also reduce the likelihood of the households needing social protection/safety net pay-outs. Provision of safe drinking water to 165000 people will reduce the potential costs of water-related illness, both for the household, and the country's health system. The Ministry of Health has allocated Rs. 9 million, Rs. 40 million and an estimated Rs. 100 million in 2012, 2013 and 2014 respectively for treating CKDu through the state-supported health extension system- much of additional expenditure goes to five of the project target districts.

Social benefits

120. Smallholder farming communities were marginalized and subordinated to local officials, as they are dependent on subsidies and welfare programmes. Most of the project's target areas were isolated during the years of the conflict, and this intervention will initiate much needed infrastructure development and exposure to new technology. The project proposes to substantially improve decision making among farmers, as they become active stakeholders in integrated water management catering to local needs. Their capacity will be improved through training and engaging in implementing project activities and interface with government officials for service provision and private sector for market negotiations. By working in partnership with the FOs and other community groups and by acknowledging their existing knowledge and mobilization potential, the project will create significant social capital. The project will promote social cohesiveness among upstream and downstream villages through planning and implementation of integrated cascade level water management plans. By promoting collective decision making and establishing protocols for water sharing for multiple uses, the project advances social and inter-community harmony. It also promotes post-conflict reconciliation by ensuring equitable access to natural resources and public services between ethnic groups and social classes.

121. The existence of a safe source of water for consumption will ease the pressure on farmer households, especially on women, who are responsible for domestic water and care of the sick. The project also tries to indirectly address the issue of CKDu type of water-related chronic disease by integrated and eco-system level water management and improves the health and wellbeing of the targeted populations. It will also promote safety, well-being, and decision-making among farmers through the benefits of EWs and climate information. Communities will benefit from the timely early warnings and reduced disruption to educational activities, family and community structures. The ability to adjust seasonal cultivation practices and crops according to tailored seasonal forecasting impacts positively on farmers ability to rationalise his inputs and assess his cultivation options for the coming months, preventing undue losses of crops and inputs.

Gender-sensitive development impact

122. Around 23.5% of all households in Sri Lanka are female-headed. Social isolation and poverty are inevitable for this group, many of whom are widowed at a young age mainly due to the conflict and deaths due to CKDu. The Dry Zone has larger number of women headed households and women taking care of disabled members of the family due to conflict and chronic diseases (especially the high incidence of chronic kidney failure affecting male farmers in the north and north central regions). In addition to this, the female unemployment rate, at 22%, is double that of men in Sri Lanka. Poverty in rural areas has pushed women to take up precarious work such as migrating overseas as unskilled domestic workers, or taking low paid jobs in the garment and other sectors.

123. GCF resources will be invested in interventions that directly impact on women's well-being and livelihood options in Dry Zone villages. Under Output 1, women will benefit from support to drought resilient home garden production with fruit/spice crops and low-cost, time saving micro irrigation. Women entrepreneurship will be promoted strengthening women's producer groups to adopt climate-smart agricultural practices, invest in agro-technology for value added products, and foster strong market linkages. Under Output 2, women-led CBOs will benefit from technical and business training to run sustainable drinking water supply schemes as social enterprises. Under Output 3, women FOs and CBOs will also be targeted to adopt ICT/mobile platforms to receive and transmit weather and climate information and benefit from response measures to floods and droughts. Project will benefit over 350,000 women (about 50% of the target beneficiaries). In particular, the project will benefit over 15000 women producer groups and at least 22,000 women (in CBOs) through enterprise development and income generation activities.

124. The project will yield positive outcomes related to health and well-being, decision making, access to resources, livelihoods, and income generation for women targeted through these various project interventions. With opportunities to generate additional income, women are more likely to respond to incentives that address their family's basic needs, such as better health and nutrition, linking to agriculture and food security improvements. The project will result in timesavings for women as a result of improved access to drinking water. The project will expand the sphere of decision-making and action through involvement in project implementation and impacts including water management planning, uptake of climate-resilient practices, management of water supply systems, and gender-targeted response measures for flood and droughts. Women will benefit from training and educational activities which may include activities related to climate change, agriculture, water management, leadership, business, finance, entrepreneurship and decision-making, thereby enabling empowerment and involvement of women in climate change adaptation planning and investments. For project specific assessment and action plan for gender, refer to Section C, Annex XIII.

Environmental co-benefits

125. Project activities will deliver a number of specific environmental benefits that include: a) soil conservation and reduction of erosion, sedimentation, and siltation of anicuts (diversions) and village reservoirs; b) improved tree cover in home gardens, catchment areas and other components of the cascade ecosystems such as silt barriers, salt/mineral balancing areas etc. that will have several interlinked environmental benefits such as improved micro-climate, improved soil structure, bioremediation for irrigation and drinking water quality, increased biodiversity; c) restoration of ecosystem integrity, goods, and services; and d) preservation of biodiversity in home gardens, in forests and in crop fields. The reduction of chemical inputs, especially N2 fertilisers through climate smart agriculture, will contribute to reduced emissions from agriculture as well. Agro-forestry in the watersheds and catchment areas will also contribute to enhanced emissions reduction.

126. Environmental benefits also include positive impacts on biodiversity and agro-biodiversity of the village irrigation systems and in home gardens. The project will enhance the ecological connection between the different functioning aspects of the cascade system. Introduction of perennial crops and timber in upstream watershed areas, protecting village forests and increasing tree cover in home gardens will have multiple environmental benefits. Soil conservation measures introduced in upstream farm fields and home gardens will not only prevent siltation of reservoirs but also support soil biota and improve ground-water yields by allowing greater percolation. Improved water yields will have a positive impact on water availability during the dry season to both humans and wildlife. The biodiversity value of VIS to provide food and habitat for many species is well recorded[56]. Some indigenous fish species, such as the snakehead, climbing perch and local catfish use small puddles in the village irrigation ecosystem to survive the dry period. Even fish found in larger lakes migrate upstream to colonize and breed on smaller seasonal reservoirs during the dry period. Trees around the perimeter of tank provide shelter against temperature extremes and microclimates required by certain species, hideouts and refuges from predators, and nesting ground for birds. The restored irrigation reservoirs harbour endemic fish and other important aquatic biota, which form essential components of the Dry Zone ecosystem and food chain for other terrestrial species. Ecological agriculture practices introduced by the project will reduce the harmful effects of agro chemical use on soil, animals and plants; and increase the diversity of soil biota.

E.4. Needs of the Recipient
Vulnerability and financing needs of the beneficiary country and population

E.4.1. Vulnerability of country and beneficiary groups (Adaptation only)

127. Across the country, climate change related weather aberrations and extreme weather events are becoming increasingly common. The increased intensity of rainfall, frequency of flood and drought incidence in the last ten years, has caused severe hardship to poor farmers across Sri Lanka impacting mostly on agricultural workers in the Dry Zone. 2015 witnessed a significantly higher incidence of high rainfall resulting in localised floods, especially in the post-war North[57], affecting roughly 31,500 people, and landslides in 3 districts,[58] affecting 295 people and leading to 7 deaths.[59] In addition, droughts affected 7 out of 25 districts and roughly 258,000 people.[60] In 2014, 1.8 million people in 16 districts including the target districts for this project (i.e. Mannar, Trincomalee, Puttalam, Kurunegala, Anuradhapura and Polonnaruwa) were affected by drought. WFP assessments showed that in April 2014 over 750,000 people were in a situation of food insecurity a condition that was worsened by low rainfall until October 2014. Heavy floods in 21 districts in November-January 2015 subsequently impacted the same districts that same year affecting 1.1 million people. The variability of the northeast monsoon, which supports agriculture in the Dry Zone, is evident through the increased number of high and very high rainfall events followed by longer dry spells. Rainfall modelling presents a more complex scenario than temperature increase but generally indicate that large areas of the Dry Zone will receive less rainfall in the medium term.

128. The impacts of climate related rainfall variability and extreme events directly affect incomes and food security of Dry Zone farmers[61] and compounds existing vulnerabilities owing to poverty, low incomes, and recovering from three decades of conflict. According to IWMI (2010) farming districts in the dry and intermediate zones are more sensitive to climate change than the rest of the country due to land degradation and heavy reliance on primary agriculture. Recurrent hydrological disasters (flood and drought) have eroded the coping capacity of Dry Zone communities making them even less able to plan for and overcome climate-related variabilities in water availability. Climate-change induced droughts also impact access to reliable drinking water as they reduce the sufficiency of water supply and falling water volumes increase the concentration of pollutants.[62] Floods also affect the water quality of drinking water sources, by directly polluting the sources as well as by destroying village irrigation reservoirs that provide a source for drinking water.[63] Farmers in the Dry Zone are also increasingly exposed to water related chronic illnesses such as kidney disease. High rates of morbidity and mortality among young male farmers are reported in the north central and northern provinces.

[57] Disaster Management Centre (2015). Situation Report, November 2015. Use of DesInventar query system, retrieved from: http://www.desinventar.lk:8081/DesInventar/main.jsp?countrycode=sr&continue=y. Accessed [30.11.2015] Also in Sunday Times (29 November 2015), "Climate Change Has Come to Stay…" quoting the Director General of the Department of Meteorology.
[58] Disaster Management Centre (2015). Situation Report, November 2015. Use of DesInventar query system, retrieved from: http://www.desinventar.lk:8081/DesInventar/main.jsp?countrycode=sr&continue=y. Accessed [30.11.2015]
[59] Disaster Management Centre (2015). Situation Report, November 2015. Use of DesInventar query system, retrieved from: http://www.desinventar.lk:8081/DesInventar/main.jsp?countrycode=sr&continue=y. Accessed [30.11.2015]
[60] Disaster Management Centre (2015). Situation Report, November 2015. Use of DesInventar query system, retrieved from: http://www.desinventar.lk:8081/DesInventar/main.jsp?countrycode=sr&continue=y. Accessed [30.11.2015]
[61] Aheeyar M.M.M Climate change adaptation in water management for food security: Recent developments in Sri Lanka-A review of Existing Knowledge and Information. Sri Lanka Water Partnership/ Global Water Partnership 2012 P9
[62] Gunatilake, S.K., Samaratunga, S.S. and Rubasinghe R.T., 2014. Chronic Kidney Disease (CKD) in Sri Lanka - Current Research Evidence Justification: A Review. Sabaragamuwa University Journal 2014, V. 13 NO. 2 pp 31-58
[63] Sectoral Vulnerability Profile: Water. National Climate Change Adaptation Strategy and Action Plan 2010-2016, Climate Change Secretariat and ADB 2010

129. Women and youth in the Dry Zone communities are particularly more vulnerable to climate change impacts. Women's role in the household care economy makes them more vulnerable to climate change and disasters due to impacts on household water availability, health of family members and safety of domestic assets such as livestock. Women traditionally manage household water, family gardens and livestock and are in the frontline of managing impacts of reduced water availability and disaster impacts. This affects their own intra-household food security, which can be exacerbated during extreme climate events and in the aftermath of a disaster[64]. Women take full responsibility for the care of children, the disabled and the elderly. In the Dry Zone districts of Sri Lanka the impact of the war and disease has left a number of women widowed and pushed others into precarious work, in Sri Lanka and overseas, as domestic migrant labour. Further details on the profile of the communities targeted under the project intervention are provided in Annex II, Feasibility Report, Section 5.2.

E.4.2. Financial, economic, social and institutional needs

130. Sri Lanka is facing a significant strain on its economy.[65] The country has just recovered from a debilitating civil war. Growth was largely driven by reconstruction and increased consumption and averaged about 6.3 percent between 2002 and 2013. Even while the country is categorized as middle-income, there are deep regional disparities in wealth and wellbeing. The percentage of people living below the national poverty line in Sri Lanka (calculated at LKR 3950 per person per month/ or USD 1.25 per person per day at PPP) declined from 22.7% in 2006/2007 to 6.7% in 2012/2013[66]. Loans and borrowings that financed the post-war infrastructure expansion (roads, railways, housing) created a serious balance of payments crisis and an onerous debt burden that needs to be addressed by new macroeconomic policies. In the short-term, therefore, GOSL is constrained by these crises to fund resilience-related investments through domestic financing, especially the incremental investment required to build the coping capacity of vulnerable, rural communities in the Dry Zone. For example, while the government will invest around USD 14 million in irrigation repairs in 2016[67], much of this finance is directed to repairing flood damages from December 2014, and will be expended in urgent repairs and not in climate-smart, cascade-based upgrading. The government is also responding to urgent health needs arising from CKDu by assigning as much as USD 40 million in improved early detection and health care. RO plants were identified (Reverse Osmosis Plants) for those areas where pipe borne water is unavailable, however government budgets for this task cannot meet 10% of the requirement.

131. Poverty and social exclusion are most prevalent in the under-developed rural districts and in all the conflict-affected districts in the Northern and Eastern Provinces where many years of deprivation and exclusion from the benefits of a steady economic growth and development resulted in greater social vulnerabilities[68]. The districts where the project interventions are situated contain large numbers of conflict-affected families, female-headed households and unemployed youth. Smallholder farmers cultivating under village irrigation systems are poorer[69] and more vulnerable than their Dry Zone counterparts who have access to major irrigation[70]. They have very limited market access, poor basic infrastructure, and were disadvantaged due to other social and health issues such as conflict and chronic disease. While the impacts of the conflict were experienced throughout the country (e.g. suicide bombing and attacks on public places, economic downturn, social issues with war casualties), several districts in the Dry Zone were directly affected by the fighting and resultant large-scale displacement.

[64] Ibid
[65] http://www.treasury.gov.lk/images/depts/fpd/docs/budgetspeech/2016/bgtspeech2016E.pdf
[66] Central Bank of Sri Lanka Annual Report 2014
[67] http://www.treasury.gov.lk/images/depts/fpd/docs/budgetspeech/2016/bgtspeech2016E.pdf
[68] UNDP 2012: National Human Development Report on Regional Disparities of Human Development
[69] IWMI 2010 and Sri Lanka Water Partnership 2012
[70] Aheeyar M.M.M Climate change adaptation in water management for food security: Recent developments in Sri Lanka-A review of Existing Knowledge and Information. Sri Lanka Water Partnership 2012

132. There is an urgent need to implement a new model of water management for Dry Zone farming communities that will demonstrate how such smallholder farmers can access modern, improved technology and services to make traditional systems more climate smart and resilient. As such, the Government of Sri Lanka seeks GCF financing to implement such a model in three of the most climatically sensitive river basins with some of the most vulnerable populations. The adaptation interventions in this project target public goods – irrigation, water supply and early warning systems. As the project targets the very poor, there is no scope for end users to pay for the services generated through the project. There is no short or medium term prospect of private sector investment in such public goods for the very poor.

133. The project will focus on targeting the vulnerable populations across its interventions. The most vulnerable groups include the rural farmers, persons with disabilities, and female-headed households and ex-combatants, in a post-conflict setting.[71] In the Dry Zone districts of Sri Lanka, the impact of war and disease has left a number of women widowed, resulting in a significant number of female-headed households. Women traditionally manage household water, family gardens and livestock and are in the frontline of managing impacts of reduced water availability and disaster impacts. This affects their own intra-household food security, which can be exacerbated during extreme climate events and in the aftermath of a disaster[72]. Addressing gender dimensions within the project design and implementation, this proposal works to identify and integrate interventions to provide gender responsive and transformative results. As women are key players in agricultural sector and, therefore, food security, livelihoods and water management, this proposal seeks to address the issue that women own fewer assets, have access to less land, have less input, and have limited access to financial services.[73] See Sections E.3.1 and F.3 for more details on social and gender benefits of the project.

134. Sri Lanka also faces technical and financial capacity gaps across institutions impeding an integrated approach to water management and security. A lack of awareness and understanding of sectoral links when managing water supply systems also makes it difficult for institutions to coordinate and work together. The proposed project strengthens institutional capacity of the various government agencies through support to planning, coordination, and implementation of activities for water management, agriculture, flood and drought response. The project provides training for development of water resources management, planning and implementation of climate-resilient agriculture, water source protection planning and drinking water solutions, agriculture and flood advisories, SOP development, etc. across sectors and national and sub-national levels.

E.5. Country Ownership

Beneficiary country (ies) ownership of, and capacity to implement, a funded project or programme

E.5.1. Existence of a national climate strategy and coherence with existing plans and policies, including NAMAs, NAPAs and NAPs

[71] World Bank Sri Lanka (2015). “Ending Poverty, Promoting Shared Prosperity: A Systematic Country Diagnostic”.
[72] Ibid
[73] The National Climate Change Policy of Sri Lanka http://www.climatechange.lk/CCS%20Policy/Climate_Change_Policy_English.pdf

135. The project is line the different national policies that provide the policy framework for rural economic development, water management and climate change adaptation in Sri Lanka, and will contribute towards their implementation. **The government's vision for development** recognizes that while agriculture plays a less important role in the national economy, it still employs more than 30% of the population and over 50% of the population in rural areas. GoSL has reiterated its commitment to rural economy and agricultural productivity in the recent policy statement of the Prime Minister. The budget for 2016 targets subsidies and low-interest credit for agriculture and support to rehabilitation of irrigation amounting to USD 150 million and the government has committed around USD 14 million to disaster risk reduction through sectoral agencies. The project aligns with the **National Agriculture Policy of Sri Lanka** in promoting food and nutrition security and technically feasible, socially acceptable, economically viable and environment friendly agricultural production technologies, marketing and related strategies. It also contributes to the implementation of **National Watershed Management Policy of 2004,** which recommends promoting and strengthening communities or stakeholders to manage their respective watersheds. The project fully supports the current government's National Food Security drive, led by the Presidential Secretariat. Under this project, agricultural water availability, efficiency and crop diversification and productivity are prioritised.

136. In addition the project's interventions are consistent with key national policies and strategies addressing climate change:

- **The National Climate Change Policy of Sri Lanka,** which promotes climate change adaptation and mitigation within the framework of sustainable development. More specifically, the Climate Change Policy recognizes the need to assess climate change vulnerability in the national development agenda, develop an information dissemination strategy to enhance adaptive capacities at all planning levels, and adopt multiple approaches to enhance knowledge and skills of different stakeholders to address current and emerging issues of climate change.
- **The Intended Nationally Determined Contribution (INDC) of Sri Lanka,** which commits to minimizing climate change impacts on food security and notes that the water sector cuts across all the other sectors including health, food security and renewable energy generation and is the most crucial sector where immediate adaptation measures are required.
- The **Draft Disaster Management Policy of Sri Lanka (2013**) advocates for a participatory, multi-agency, multi-stakeholder engagement in line with national and international standards for effective disaster relief and response.
- The **Sri Lanka Comprehensive Disaster Management Programme** (SLCDMP) implemented by the Ministry of Disaster Management, aims to create national and sub national level agencies capable of assessing disaster risk and make decisions for short, medium and long term disaster management and to strengthen the capacity of communities, local governments and sub national agencies to respond to and recover from disasters.

137. GoSL produced a Technology Action Plan and Project Ideas for each technology under priority sectors as part of the Technology Needs Assessment. Improving irrigation and drinking water for the Dry Zone; rehabilitation/restoration minor tank network (cascade) in Dry Zone; improving fish culture in reservoirs in Dry Zone districts; sustainable land management for improving crop productivity; crop diversification and precision farming to manage climate vulnerabilities; and promoting roof top rainwater harvesting for drinking and household use are amongst the prioritized project ideas.

138. Finally, The United Nations Development Assistance Framework (UNDAF 2013-2017) for Sri Lanka acknowledges that – in the context of climate change – improved disaster management enhances the sustainability of economic growth, particularly in districts that are prone to natural disasters. The proposed project is consistent with three specific output areas from the UNDAF, namely: 1.1.2) Increased awareness in government planning for integration of DDR into development planning by providing support for mobilising Government, civil society and the private sector to collectively integrate DRR concepts into national, regional and local development plans; 1.1.3) Integrate data from multiple sources and sectors as well as carryout physical, social, economic and environmental analysis to support policies and programmes and target resources in improving sustainability and resilience to improve information management promoting evidenced based policy making; and 1.1.6) Support to adapt to climate change induced rainfall and temperature variations on the fauna, flora and soils, by facilitating adaptive agro-forestry, soil-water management and sustainable energy services through practical and innovative approaches.

E.5.2. Capacity of accredited entities and executing entities to deliver

139. The proposal is aligned with UNDP's comparative advantage in the areas of capacity building, providing technical and policy support, reducing barriers and creating enabling conditions for adaptation planning and investments. Specifically, the proposed project will build upon UNDP's comparative advantage stemming from experience in working with governments and communities in Sri Lanka and globally on: i) establishing and strengthening institutional, policy and legislative mechanisms; ii) building capacity; iii) undertaking risk assessments; iv) mainstreaming climate change adaptation, disaster risk reduction and early warning systems into development planning; and v) harnessing best practices and community-based approaches across different thematic areas for climate change adaptation and disaster risk reduction. This includes experience with initiatives focused on transferring knowledge and technology via South-South cooperation.

140. The UNDP Country Office (CO) in Sri Lanka is well placed to oversee the implementation of the proposed project. This is because it has built close connections with Ministry of Mahaweli Development and Environment through its support to the implementation of at least 15 projects on enhancing biodiversity, sustainable energy, sustainable land management and forestry in the country including with financing from the GEF, SCCF and Bi-lateral donors. UNDP has played a pivotal role among the UN agencies and other development partners in supporting the government of Sri Lanka, through Ministry of Disaster Management in mainstreaming DRR and early warning system aspects into national development planning processes and sectoral agencies. UNDP provides technical support to the implementation of the Comprehensive Disaster Management Programme of the Government of Sri Lanka, which is spearheaded by the Ministry of Disaster Management.

141. UNDP can provide a vital co-ordination role for catalyzing enhanced capacity to adapt to climate change risks and impacts across sectors in Sri Lanka. To ensure that the necessary capacities and institutional mechanisms are achieved at both the national and district levels, UNDP will maintain its upstream focus. Furthermore, UNDP will facilitate and ensure transformational impacts at the community level. UNDP also has considerable experience in providing additional support to National Implementation (NIM) to facilitate smooth project delivery. UNDP has been using an approach based on the principle of optimizing resources and capacities through multi-sectoral and multi-stakeholder driven partnerships in Sri Lanka. The country office in Sri Lanka is supported by Regional Technical Advisors at the UNDP offices in Bangkok, Thailand, as well as by policy, adaptation, economics and climate modeling experts in New York, Cape Town and Bangkok. The project will be implemented by Ministry of Mahaweli Development and Environment using UNDP's National Implementation Modality, which is designed to ensure domestic systems are used for accountability. The interventions through this project will be compliant with the Fund's ESS and compliant with stakeholder consultations.

142. The Ministry of Mahaweli Development and Environment (MMDE) of Sri Lanka is the sponsor for the proposed project and the Executing Entity. The MMDE is mandated to coordinate and oversee environmental conservation and natural resources management and water management and includes the only river basin authority of the country. The ministry has framed key policies for adoption in management of environment and natural resources of the country including on forest management, waste and chemicals management and climate change. For 2016, Ministry of Mahaweli Development and Environment has received an annual allocation of USD 500 million from the government for management of environment and natural resources of the country. Over the past few years, Ministry of Environment has received and managed projects with grant funding including from Government of Korea, Government of Japan, Asian Development Bank, UNDP, WFP, UNEP, and EXIM Bank – Korea. The Ministry's recurrent expenditure allocation for the upcoming years of 2016 and 2017 will be USD 26 million and USD 29.4 million respectively. Further, the capital expenditure denoting investment in environmental and water management projects implemented throughout the country for the two years is projected to be USD 55 million for 2016 and USD 67 million for 2017. These include projects funded by GEF, Adaptation Fund and EU.

143. MMDE has extensive past experience in executing large foreign funded projects and is also currently managing ongoing portfolio of foreign and government funded development projects. MASL (Mahaweli Authority of Sri Lanka) operates under MMDE as a semi-autonomous institution which has completed an array of large hydro and water resource development initiatives and its past experience will serve well in the implementation of the proposed project. MMDE has played a major role in the successful implementation of the Pro-poor Economic Advancement and Community Empowerment (PEACE) project (USD 33.6million, 2006-2011) in Kurunegala and Anuradhapura Districts to empower the farming community for increasing the productivity of their Agriculture lands through rehabilitation of

Irrigation systems using a long given by the Japan Bank of International Corporation. In addition, major projects such as, Uma Oya Multipurpose Development Project (UOMDP, over USD500 million) and Dam Safety and Water Resource Planning Project (DSWRPP, over USD70 million) are currently being implemented. Please see section C.4 for additional details.

E.5.3. Engagement with NDAs, civil society organizations and other relevant stakeholders

144. **Engagement of the NDA and other agencies:** Project development was initiated and led by Ministry of Mahaweli Development and Environment (MMDE), supported by the Presidential Secretariat (the President is the Minister of Mahaweli Development and Environment) through a multi-stakeholder consultative process. The priorities addressed in this project were first identified in the National Climate Change Adaptation Strategy (2011-2016) and further elaborated in the Second National Communication (2012) and National Adaptation Plan (2015). The INDCs submitted by Sri Lanka just before Paris Conference of Parties in 2015 identified water sector as a critical intervention area for climate change adaptation- focusing on food security, health and disasters.

145. The Climate Change Secretariat (within the MMDE) represented the NDA and coordinated the concept and proposal development through the establishment of the Technical Working Group (TWG) to oversee project design. An integrated river-basin based approach for project implementation was endorsed by the TWG which comprised members from the following agencies: Ministry of Mahaweli Development & Environment, Ministry of Agriculture, Ministry of Disaster Management, Ministry of Foreign Affairs, Ministry of Irrigation, Department of Agriculture, Ministry of Health, Ministry of City Planning and Water Supply, Department of Agrarian Development, National Water Supply and Drainage Board, Department of National Community Water Supply, International Water Management Institute (IWMI), National Planning Department, External Resources Department, Department of Meteorology, Department of Irrigation. Under the guidance of the TWG, the Technical Feasibility Report (Annex II) was developed through extensive stakeholder consultations (including community consultations). The report analyses the gaps, needs, and barriers, examines lessons learnt and best practices from past and on-going projects, and provides recommendations for the design and implementation of the proposed interventions.

146. Led by the NDA, the TWG met multiple times in the period between October and March, to provide input to and review the draft Feasibility Report as well as the concept note. An inter-ministerial committee chaired by the Secretary to the President was established to coordinate inputs from different agencies and obtain their recommendations. The concept was endorsed in the 3rd meeting of the TWG, providing the approval to proceed with proposal development. Subsequent inputs and review informed the finalization of the proposal and no-objection letter was issued by the NDA on March 24th, 2016 (post UNDP appraisal meeting). Please refer to Annex XIII, for further details on the NDA and TWG engagement and approval process.

147. **Stakeholder consultations including civil society organizations: A number of civil society organizations were consulted during the development of the feasibility study and the proposal.** Field consultations were held in six districts involving various NGOs (Such as IUCN, SAPSRI, Janathakshan, and GEF SGP), FOs, women's organisations managing community water supply projects, and other CBOs. Field consultations included visits to local ASCs and discussions with field extension officers of Agrarian and Agriculture Departments. Targeted consultations were held to consult with and engage women stakeholders in the design of the project as well as the development of the Gender Assessment and Action Plan (Refer to Section C, Annex XIII). These consultations took place during the field visits (to consult communities) as well as the consultation event organized at the UN Compound with a number of local organisations and women's groups working in project target districts. Meetings were also held with Provincial Departments of Agriculture and their extension services during the field visits. In addition to civil society, women groups, and community field consultations, a number of bilateral discussions were held with Ministries, technical experts, academics and research institutions. Other national and international actors such as the International Water Management Institute (IWMI) and Sri Lanka Carbon Fund (as potential Direct Access entity for GCF) were also consulted and engaged in the process of preparing the funding proposal. Please see Section D, Annex XIII for details on the various stakeholder Consultations including for the targeted Community-based Consultations.

148. Stakeholder engagement plan: The project would engage multiple stakeholders at national and local level. This includes the five government agencies who are responsible parties to the project. In addition, the project will engage with Provincial agencies, Divisional Secretariats, Agrarian Services Centres (ASCs), Farmer Organisations,

Community Based Organisations, Private Sector and NGOs to implement and monitor project impact. Project specifically targets women and youth groups in implementation, maintenance, and monitoring of project investments. Detailed stakeholder engagement plan by Activity level is provided in Annex XIII.

E.6. Efficiency and Effectiveness

Economic and, if appropriate, financial soundness of the project/programme

E.6.1. Cost-effectiveness and efficiency

149. The effectiveness of proposed solutions has been tested out in a number of projects at varying scale. This project builds on those lessons of cost-effectiveness and efficiency of delivery. The geographic, hydro-climatic and socio-economic suitability of the recommended activities were successfully tested in the field and they offer the most effective and efficient solutions to the climate stresses on local water resources in Dry Zone Sri Lanka.

150. The costs of implementing the project are heavily co-financed by existing systems and staff of government agencies. For example the Agrarian Services Centres (ASCs) will become the project's nodal implementing 'hub' at the local level, coordinating the integrated water management plans at sub-basin level as well as the procurer and conveyor of climate and technology-related information. The project will build synergies with other projects in the same geographical location and working on issues like water resource development and management, disaster management and climate resilience to maximize effectiveness. For instance, the project will synergize with NCPCP interventions such as water augmentation, which increases the productivity in the farms. It will also use local materials such as excavated silt for catchment protection and dam strengthening.

151. Costs of the infrastructure investments have been estimated utilizing comparable benchmarks from other projects. A cascade could have varying number of village irrigation systems (VIS). On average the project costs the upgrading of a VIS including catchment conservation at USD 50,000. A cascade that has 10-12 tanks (the generalized median) would cost 500,000-600,000. This is comparable to the cost of IUCN-HSBC (500,000) and SCCF (600,000) projects. Average costs for water treatment facilities (advanced filtration USD 3500 for a small sized/17,000 for large and 120,000 for a small community managed water supply system) and RWH (USD 550) have been derived from the benchmarks of other projects discussed in the Technical Feasibility Report. The benchmarks have also been tabulated in Annex XIII.

152. Community participation in the implementation and operational stages will ensure cost-effectives of the investments. Previous experience shows that in some instances (e.g. for catchment protection) labour is usually volunteered. The RWHs will be managed by the community, thereby reducing the operation and maintenance costs for the government in the long term. Similarly, the community contribution to the management of hydro-meteorological stations can make the maintenance cost-effective because this will reduce the inputs (travel, salaries and accommodation) from the project. The data collected by the communities from the manually operated rainfall gauges will be made available to the researchers and organizations such as DoM, which will enhance the current weather information database, and the resolution of forecasting, without the government having to spend on operation of rainfall and water level gauges.

153. Alternative solutions were considered in the design of the proposed interventions. An alternative solution to the loss of productivity in village irrigation systems is to divert the agricultural population to other forms of production such as industries, which is not a foreseeable investment for the agricultural heartland of the country. Therefore, the government policies in the past 60-70 years are aimed at improving the agricultural productivity in this region. While there are significant investments in major irrigation, there is a need to invest in strengthening the village irrigation systems and improved agricultural practices to complement the government investments. In the case of drinking water, the feasibility study has considered all the possible alternatives including RWH, small-scale water supply schemes with simple treatment and advanced filtering methods for complicated water pollution cases. The option that has not been considered is the large-scale water supply schemes. Considering the extraction capacity of the water resources and scattered nature of the population compared to town centres, the study proposes an optimum mix of above-mentioned solutions excluding large and medium scale water supply schemes. Related to the investments in weather forecasting and early warning systems, an alternative solution is a fully automated system of weather and hydrological information, which can be centrally operated. However, the country's ability to maintain such a sophisticated system is not clearly established at present. Overall, the proposed solutions were designed to be in line with best practices, community

ownership, and synergies across the three inter-related outputs and build on ongoing efforts to ensure their efficiency and cost-effectiveness.

E.6.2. Co-financing, leveraging and mobilized long-term investments (mitigation only)

N/A

E.6.3. Financial viability

154. The public goods nature of this project's outputs doesn't entail significant revenue generation or cost recovery from the project. Where income generation opportunities exist, these apply directly to the beneficiaries (for instance, improved agricultural incomes and fee contribution from farmers to Farmer Organizations for O&M) primarily as household incomes or contributions to sustain O&M. In addition, the revenues accrued to each CBO managing advanced purification plants from water sold (USD.007 per liter) to communities is directed to (a) subsidize water for households that are conflict-affected or have people with kidney disease, (b) cover operation and maintenance costs for the infrastructure, (c) support staff resources, and (d) maintain a reserve fund that is used for community development activities. A financial analysis for the project is therefore not deemed pertinent given the proportion of financial flows at the CBO level relative to the project costs.

155. The **expected economic internal rate of return** is 22% for this project, which exceeds 10%, the assumed discount rate. Under all test cases including the "worst case" scenario combining 20% increase in investments costs with a 20% reduction in total benefits; EIRR remains above the minimum threshold. Please refer to Annex XII for the detailed economic analysis.

156. **Financial viability** of the project investments is assured through a combination of elements that builds ownership and the technical, financial, operational and institutional capacities of the national and sub-national governments and local communities to maintain and derive economic, social, environmental benefits from the proposed investments. These aspects include: (i) Co-investments by government institutions and communities. The project will leverage additional financing (USD 14M) from the GoSL through the departments engaged in the project implementation. It will also leverage considerable community co-investment for the proposed activities through O&M of water solutions and field trials of climate smart crops and agro-technology. Project will thereby promote ownership and catalyse further public sector financing to sustain beyond the project lifetime; (ii) Building on traditional systems with innovative climate-resilient technologies and best practices: Interventions that combine traditional systems with modern elements will rejuvenate the water supply systems and inject much needed finance and capacity to continue to operate these for recurring benefits that will ensure operational and financial viability beyond the project period; (iii) Decentralized solutions with capacity for local community O&M and management**:** The project will revive community engagement at a scale and build capacity and ownership for operation and maintenance of these systems. It will enhance organisational capacity of farmers to plan and implement local water management solutions, provide technologies and systems for improved agricultural production and safe drinking water, and enhance financial capacity to sustain investments post-project; and (iv) Enterprise development and employment: The project will promote entrepreneurship among communities to deliver a suite of new technologies for resilient agriculture, drinking water and climate information. It will build capacity of young men and women in these rural areas to engage in managing these ventures as enterprises in the village. The engagement of women in FOs and as interlocutors between private sector markets for ecologically produced, climate smart crops will increase livelihood options and income sources that will enable financial viability and impact of the project beyond its lifetime.

E.6.4. Application of best practices

157. The project applies best practices from Sri Lanka and elsewhere to address three distinctly inter-connected issues –lack of irrigation and drinking water and timely weather/climate information- which affect the resilience of the targeted vulnerable communities in the Dry Zone of Sri Lanka. The technological approaches and design builds on the traditional knowledge and practices, combined with modern systems for improved water use efficiency and community-based management practices for maintaining both irrigation and drinking water systems. The project design learns from best practices of recent projects that have applied the cascade-wide approach to minor irrigation rehabilitation. These include cascade-level farmer committees, reviving traditional elements of the irrigation systems and combining with modern engineering solutions; reviving and strengthening community co-management of resources (land and water) as well as community input in to maintenance of structures for village irrigation and drinking water.

158. Climate resilient agriculture and tailored advisories for floods and drought learn from regional best practices-scaling up climate-smart agricultural practices in Vietnam and strengthening early warning, forecasting and water management systems to enhance the adaptive capacity of smallholder farmers to drought and floods in India. These projects have demonstrated very positive results on the ground in changing farmer behavior in relation to chemical use, low-input drought-resistant seeds, water efficient technologies for agriculture and linking tailored climate advisories and technical inputs with positive farm-level productivity increase. [74]

159. The effectiveness of the best practices applied were tested and the results are discussed in Section 3.3 of the Technical Feasibility Report. Village irrigation rehabilitation is shown to have greater impacts and sustainability when watersheds are preserved and farmer organizations strengthened for maintenance. Rural water supply schemes are better managed through empowered women in these villages who have a very strong stake in obtaining clean drinking water. Climate resilient crops and practices have a better chance of success if accompanied with marketing initiatives and private sector engagement and climate advisories will have a good chance of adoption if farmer knowledge is considered through a participatory approach.

E.6.5. Key efficiency and effectiveness indicators

GCF core indicators	Estimated cost per t CO_2 eq, defined as total investment cost / expected lifetime emission reductions (mitigation only)	
	Expected volume of finance to be leveraged by the proposed project/programme and as a result of the Fund's financing, disaggregated by public and private sources (mitigation only)	
Other relevant indicators (e.g. estimated cost per co-benefit generated as a result of the project/programme)		

[74] CGIAR Research Program on Climate Change, Agriculture and Food Security (2014). "Assessment of India's Integrated Agro-meteorological Advisory Service from a farmer's perspective". Retrieved from: https://cgspace.cgiar.org/rest/bitstreams/34467/retrieve

F.1. Economic and Financial Analysis

160. Economic analysis of the project (See Annex XII for details) was carried out in accordance with the Guidelines for the Economic Analysis of Projects of United Nations Development Program (UNDP 2015). The feasibility of the investments was determined by computing the economic internal rate of return (EIRR) and economic net present value (NPV), and comparing the EIRR with the assumed 10% discount rate (as recommended in UNDP 2015). The period of analysis covers 25 years.

161. **Please note that**, in the absence of guidance in the proposal template on the selection of a specific economic discount rate to use in the economic analysis, all proposals supported by UNDP have opted to use a 10% discount rate, in line with the existing practice of multilateral development banks. Should the GCF request that all proposals submitted for review use the same discount rate and that this rate be other than 10%, we will be happy to revise the economic analysis accordingly.

162. The economic analysis is based on the following additional assumptions about the project and economic conditions:

- Benefits generally won't accrue the first year of the project. Because of the soft nature of the interventions, benefits can accrue starting from the second year.
- Based on the budget and phasing of the project, we use the proportion of the project that is implemented each year to calculate the benefits that accrue from the project up to the 7th year when the entire project will be implemented.

163. Economic benefits valued for this analysis include:

- Improved irrigation access for farmers that will maintain carry-over storage to the dry periods and increases the agricultural productivity and farmer incomes through efficient water distribution.
- Value of introducing fingerling per tank.
- Increased water availability and quality due to better storage capacity of the tanks
    - Focusing on travel time saved due to water available in the community.
- Strengthening early warning, forecasting and water management systems to improve agricultural productivity as a result of improved climate advisory services.

164. The total cost of the project amounts to USD 52.08 million that includes operating and maintenance costs for the interventions over the lifetime of the project and the Government of Sri Lanka's co-financing.

165. The cost benefit analysis shows that with a 10 percent discount rate, the discounted net present value of the project is valued at about 34.7 million USD. The economic internal rate of return is 22%, which exceeds 10%, the discount rate assumed for the analysis.

166. All proposed investments are economically feasible, with positive NPVs and EIRRs exceeding the minimum threshold of 10%. Under all test cases including the "worst case" scenario combining 20% increase in investments costs with a 20% reduction in total benefits; EIRR remains above the minimum threshold. There are a number of direct benefits of the projects that were not explicitly estimated in the economic analysis. The implication of ignoring these additional benefits is that the estimates of the economic IRR and NPV will be the lower bound and provide conservative estimates of the value of the project.

167. The targeted populations' baseline situation of poverty, conflict-related displacement, livelihood insecurity and access to services are significantly worsened by repeated cycles of flood and drought, climate variability, and gradual erosion of health, nutrition and income status. These districts contain large numbers of female-headed households and unemployed youth. Post-conflict investments in roads, schools, hospitals and housing have failed to deliver the required development benefit due to the continued livelihood vulnerability and increasing exposure to impact of climate variability and extreme events.

168. The public goods nature of this project's outputs doesn't entail significant revenue generation or cost recovery from the project. Where income generation opportunities exist, these apply directly to the beneficiaries (for instance, improved agricultural incomes and fee contribution from farmers to Farmer Organizations for O&M) primarily as household incomes or contributions to sustain O&M. In addition, the revenues accrued to each CBO managing advanced purification plants from water sold (USD.007 per litre) to communities is directed to (a) subsidize water for households that are conflict-affected or have people with kidney disease, (b) cover operation and maintenance costs for the infrastructure, (c) support staff resources, and (d) maintain a reserve fund that is used for community development activities. A financial analysis for the project is therefore not deemed pertinent given the proportion of financial flows at the CBO level relative to the project costs.

169. Without significant cost-recovery, the additional investment required to build resilience to climate change in rural Dry Zone villages is prohibitive for a government that is constrained by heavy debt and an unfavourable balance of payments. The project is economically viable and advances financial viability of the investments beyond project duration. A grant financing mechanism is, therefore, sought to support the prioritised interventions of this project. The Government of Sri Lanka seeks maximum concessionality for the proposed urgent adaptation actions that will benefit largely poverty-stricken and post-conflict regions of the island nation.

F.2. Technical Evaluation

170. This project focuses on infrastructure facilities and services critical for enhancing and protecting life and livelihoods and reducing the impacts of weather/climate related disasters: irrigation facilities and their watersheds, climate-resilient agriculture, drinking water purification and supply, and seasonal weather forecasting and early warning. The technological approaches to deliver these services are designed to suit the local priorities and needs including the abilities to operate and maintain the infrastructure in a cost-effective way. The project builds on the traditional methodologies for operating and maintaining village irrigation systems, and successful community-based management practices of water supply facilities.

171. The technologies required to deliver these services are identified based on gaps and barriers (detailed in Feasibility Study, Annex II): upgrading and improving approximately 325 village irrigation systems in three vulnerable Dry Zone river basins and restoring their watersheds; providing drinking water facilities to seven districts linked to those river basins; and installing a network of weather and hydrological measurement network. Furthermore, use of improved weather forecasting together with agricultural advisories, provision of market access and related training will enable farmers to adopt climate resilient and environment-friendly agricultural practices that will minimize pollution of drinking water sources.

172. Upgrading and improving village irrigation systems will incorporate the traditional designs such as "mud sluice" which enables removal of silt, upstream tree belt and mechanisms to trap sediment, and downstream interceptor to trap alkaline water seeping through the dam will be re-introduced, and will be combined with modern designs of spillways, dams, sluices and water measuring structures. The structural designs make the irrigation system more resilient to the climate change impacts such as floods and droughts, while the restoration of the watershed enhances the sustainability, by reducing land degradation and reservoir siltation. Accordingly, the design builds on the best practices learnt from past interventions, and revives the traditional management system where the community operated and maintained the village irrigation systems. The selection of irrigation systems is cascade-based, which contributes to better river basin management.

173. The drinking water facilities will include a combination of community water supply schemes with simple treatment, advanced filtering techniques and rainwater harvesting units. The selection of technologies depends on water quality and safe yield of the source, remoteness of the area, and socio-economic factors. Water supply with simple treatment will use the sources with acceptable raw water quality and cater for villagers who could be connected with a pipe network. The type and particle size of the contaminants and health issues will decide the selection of advanced filtering technologies. Rainwater harvesting will target remote areas, areas with topographic constraints, women-headed households and areas having water quality issues, but will be promoted as a sustainable solution among other areas, as well. Accordingly, the design builds on the best practices in rural water supply in Sri Lanka, including using the technologies that were found to be easily managed by the communities.

174. The technologies to deliver improved seasonal forecasting and early warning of extreme climatic events were identified as a network of agro-meteorological stations, automated rain gauges, and water level sensors at critical locations. The agro-meteorological stations are manually operated to ensure low cost in maintenance, while the design incorporates medium-cost automatic rain gauges located reference existing automated weather equipment in or in proximity to the selected river basins. Vulnerable locations in the river flood plain and close to large irrigation reservoirs were identified and such locations will be equipped with automated water level sensors and rain gauges. In addition, floods in the upper catchments of the rivers and breaching of small reservoirs are found to be resulting from local floods and low-cost water level sensors, which can be maintained with local expertise, are proposed in the sub-watersheds of the river basin. Village irrigation system level low-cost water level gauges and rain gauges are designed to enable farmers to schedule irrigations, improve operations and make the optimum use of water resources. The network is designed to improve the seasonal forecasting, which facilitates climate resilient agriculture, as well as providing early warning to prevent frequent damages to irrigation and other rural infrastructure.

175. Finally, the project also promotes technological innovation through the use of the Internet and mobile phone technology to distribute and receive communications, warnings and advisories. While sharing of data over the Internet allows a wider audience to use the data for seasonal and shorter duration forecasting and hydraulic modeling, the capacity of early warnings and advisories is enhanced by direct transmission of data to the end-users and also ensures cost-effectiveness of the interventions.

F.3. Environmental, Social Assessment, including Gender Considerations

A Social and Environment Screening Procedure and a detailed ESMP plan have been developed for the project (See Annex VI) to assess and address environmental and social risks arising from the project.

Environment

176. The project is expected to have some short term small to medium scale environmental impacts particularly in relation to the rehabilitation of existing infrastructure (tanks specifically) but will have significant long lasting environmental benefits (See Section E.3.1). The project will rehabilitate existing irrigation infrastructure to allow for greater water retention during rainfall seasons, capturing the flood flow from upstream areas during intense rainfall events. This water can then be used for irrigation during dry seasons, thus providing a far more secure food source. Further, the additional water can be used for drinking water during drought periods. This will provide both environmental and social benefits in the short to long term including provision of improved water quality and quantity retention and provide for improved water management which will in turn, provide more climate resilient agriculture.

177. The project will involve earth works that will be undertaken during the dry season to reduce erosion and air quality issues. Sediment that is removed from the irrigation infrastructure will be placed back on to agricultural land, thereby provided a significant environmental and social benefit by returning previously lost sediment that is normally of high quality back into the agricultural sector. Changes in land use and water management will ensure this sediment is retained in-situ rather than being lost again.

178. The project areas currently use groundwater as a source of potable water. The groundwater is contaminated with heavy metals, nutrients and other chemical attributes that make it not only non-palatable but more importantly, extremely dangerous to life through its consumption. The consumption of the water has contributed to illnesses such as kidney disease and even death. Water sterilisation and purification processes will be established to remove chemicals, heavy metals etc. from the water to increase its quality and contribute to reduction in the potential for kidney disease and other diseases. There will be no additional water taken above that currently used. There will be some waste generated from this process (filters predominantly, potentially some small amount of liquid residue, that will be recycled where possible); however, the environmental and social benefits are extremely significant in that the sterilisation and purification will save lives. The project also includes the installation of rainwater tanks that will provide potable water for households. This will reduce the reliance on groundwater as well as water coming from overland flow through the irrigation channels.

179. The project has developed a complaint's register along with a two tiered Grievance Redress Mechanism consistent with the UNDP's Stakeholder Response Mechanism: Overview and Guidance (2014) and World Bank Group Safeguards Policies. The Grievance Redress Mechanism has further been designed in consideration of the specific local context and draws on existing processes and procedures for the resolution of complaints and grievances in Sri Lanka. The Grievance Redress Mechanism established goals and objectives along with eligibility requirements to make a complaint and/or grievance. It has been designed that all parties will act in good faith throughout the process and more importantly, that is will be arbitrary in nature in trying to achieve mutually acceptable resolutions for all parties. The Grievance Redress Mechanism also provides for the covering of costs for legitimate complaints or grievances so as individuals and/or groups are not disadvantaged by bring complaints to the attention of the Ministry and UNDP. Finally, the Grievance Redress Mechanism allows individuals and/or groups to also file a complaint with the Social and Environmental Compliance Unit within the Office of Anticorruption and Integrity within the UNDP should they have any concerns as to corruption, unethical behavior or where they believe their complaint or grievance has not been adequately addressed.

Social

180. The interventions will be undertaken in areas of Sri Lanka that have observed significant conflict in the past. Many of the people of the area were impacted by the past civil war and as such, there is a need to rebuild peace within and among ethnic groups; and community spirit. The project will benefit individuals through improved agricultural productivity and access to clean disease free drinking water as highlighted above. Communities can feel safer and cope better with flood events through changes in agricultural practices that are more climate resilient and have improved access to water during drought periods. This in turn increases community resilience by providing strengthened village irrigation infrastructure which is central to life in the Dry Zone, therefore enhancing the lives of vulnerable groups including those with disabilities, minority groups, youth and the elderly. By having water available for longer, the community has far better means of being sustainable with respect to food production and thereby increasing their livelihoods.

181. As highlighted above, the project will also increase the safety of people though access to clean water through sterilization and purification, particularly in high-risk areas that have observed mortality and extreme sickness from drinking contaminated water. Finally, the project will implement an early warning system that will allow communities to adapt their current activities to meet the increasing threat of climate change. With this information, it is highly likely that livelihoods will be saved and it will improve two-way communication mechanisms and inclusion of resilience building in the socio-economic planning process.

Gender

182. The project was designed in consultation with women's organizations and CBOs in the field and through a structured consultation. The design integrates gender sensitive planning and implementation particularly for women farmers, women-headed households and for younger women without employment. The Sri Lankan National Action Plan for the Protection and Promotion of Human Rights 2011–2016 includes a section highlighting the rights of women and a "commitment to ensuring gender equality." Within the project design and implementation, the interventions will provide gender responsive and transformative results. As women are key players in agricultural sector and therefore food security, livelihoods and water management, this proposal seeks to address the issue that women own fewer assets

and have access to less land, have less input, and access to fewer financial services. Around 23.5% of all households in Sri Lanka are female-headed.

183. The project will work to improve the lives of women more broadly through increased food security and clean drinking water in locations, where, in the past, women were impacted by cultural practices. Women have a reliance on home gardens to support their families and project interventions under Output 1 will support women to grow food and earn income through agro-based small industry. Moreover, the project will target women-headed households and disabled women for low-tech agriculture and household drinking water improvement, lessening the current burden on such families. Quantitative outcomes of this targeting include female-headed households as beneficiaries, improved access to drinking water, and improved livelihoods and business development services targeting rural women entrepreneur groups.

184. At least 15,000 women in the project target area will benefit from income opportunity and entrepreneurship through implementation of climate resilient agriculture technologies and market linkages and about 22,000 women will benefit from empowerment, skills development and employment by managing community drinking water projects as local social enterprises. The expected outcomes of the project include improvements in health and well-being, improved livelihoods, and business development services targeting rural women entrepreneur groups. The qualitative outcomes include increased opportunities to generate additional income, as women are more likely to respond to incentives that address their family's basic needs, such as better health and nutrition, linking to agriculture and food security improvements; time-savings for women as a result improved access to drinking water; contribution to improved self-esteem and empowerment of women in the community; expanded involvement in public and project decision-making as a result of initiation of women into active participation in income generating activities; support for training and educational activities which may include activities related to climate change, agriculture, water management, leadership, business, finance, entrepreneurship and decision-making, thereby enabling empowerment and involvement (or increased involvement) of women to participate with confidence in community meetings; and effectiveness of awareness raising. A detailed Gender Assessment and Gender Action Plan is provided in Annex XIII.

F.4. Financial Management and Procurement

185. The financial management and procurement of this project will be guided by UNDP financial rules and regulations available here: https://info.undp.org/global/documents/frm/Financial-Rules-and-Regulations_E.pdf. Further guidance is outlined in the financial resources management section of the UNDP Programme and Operations Policies and Procedures available at https://info.undp.org/global/popp/frm/Pages/introduction.aspx. UNDP has comprehensive procurement policies in place as outlined in the 'Contracts and Procurement' section of UNDP's Programme and Operations Policies and Procedures (POPP). The policies outline formal procurement standards and guidelines across each phase of the procurement process, and they apply to all procurements in UNDP. See here: https://info.undp.org/global/popp/cap/Pages/Introduction.aspx.

186. The project will be implemented following the National Implementation Modality (NIM) following NIM guidelines available here: https://info.undp.org/global/documents/_layouts/WopiFrame.aspx?sourcedoc=/global/documents/frm/National%20Implementation%20by%20the%20Government%20of%20UNDP%20Projects.docx&action=default&DefaultItemOpen=1. UNDP will ascertain the national capacities of the implementing partner by undertaking an evaluation of capacity following the Framework for Cash Transfers to Implementing Partners (part of the Harmonized Approach to Cash Transfers - HACT). All projects will be audited following the UNDP financial rules and regulations noted above and applicable audit guidelines and policies.

187. The NIM Guidelines are a formal part of UNDP's policies and procedures, as set out in the UNDP Programme and Operations Policies and Procedures (POPP) which are available here: https://info.undp.org/global/popp/Pages/default.aspx. The NIM Guidelines were corporately developed and adopted by UNDP, and are fully compliant with UNDP's procurement and financial management rules and regulations.

188. The national executing entity MMDE - also referred to as the national 'Implementing Partner' in UNDP terminology - is required to implement the project in compliance with UNDP rules and regulations, policies and procedures (including the NIM Guidelines). In legal terms, this is ensured through the national Government's signature of the UNDP Standard Basic Assistance Agreement (SBAA), together with a UNDP project document which will be signed by the Implementing Partner to govern the use of the funds. Both of these documents require compliance. Prior to signature of the project document, all national Implementing Partners like MMDE need to have undergone a Harmonized Approach to Cash Transfer (HACT) assessment by UNDP to assess capacities to implement the project. During implementation, UNDP will provide oversight and quality assurance in accordance with its policies and procedures, and any specific requirements in the Accreditation Master Agreement (AMA) and project confirmation to be agreed with the GCF. This may include, but is not limited to, monitoring missions, spot checks, facilitation and participation in project board meetings, quarterly progress and annual implementation reviews, and audits at project level or at implementing partner level on the resources received from UNDP.

189. The Harmonized Approach to Cash Transfer (HACT) framework consists of four processes: (1) macro assessments; (2) micro assessments; (3) cash transfers and disbursements; and (4) assurance activities. Assurance activities include planning, periodic on-site reviews (spot checks), programmatic monitoring, scheduled audits and special audits. During micro-assessment, there can weaknesses identified for which actions are required to addresses the gaps. When a spot check finds that the gaps are not addressed it will mean that the level of assurance activities will have to remain higher and modalities of engaging with that implementing partner will have to be reviewed if necessary. All details are available here:https://undg.org/wp-content/uploads/2015/02/2014-UNDG-HACT-Framework-English-FINAL.pdf.

190. The project will be audited in accordance with UNDP policies and procedures on audits, informed by and together with any specific requirements agreed in the AMA currently being negotiated with the GCF. According to the current audit policies, UNDP will be appointing the auditors. In UNDP scheduled audits are performed during the programme cycle as per UNDP assurance/audit plans, on the basis of the implementing partner's risk rating and UNDP's guidelines. A scheduled audit is used to determine whether the funds transferred to the implementing partner were used for the appropriate purpose and in accordance with the work plan. A scheduled audit can consist of a financial audit or an internal control audit.

191. All GCF resources will be provided to the implementing partner, less any agreed cost recovery amount. Under UNDP's national implementation modality, UNDP advances cash funds on a quarterly basis to the implementing partner (executing entity) for the implementation of agreed and approved programme activities, in accordance with UNDP standard policies and the NIM Guidelines. The implementing partner reports back expenditure via a financial report on quarterly basis to UNDP. Any additional requirements will be as in accordance with the AMA as and when it is agreed.

A draft procurement plan (which will be further discussed and revised prior to UNDP Project Document signature) is provided in Annex XIII.

G.1. Risk Assessment Summary

192. Risk factors associated with the project implementation include mainly technical and operational, institutional, and social and environmental aspects (please refer to section F.3 for ESS assessment). The risks related to technical and operational capacities may affect design and installation of the irrigation, drinking water, and early warning systems infrastructure. Risks related to inadequate operation and maintenance of the water supply solutions and early warning systems can impede sustained water supply and generation of EWs and forecasts. Other risks could be related to operational issues of delays in completion of the infrastructure or availability of sufficiently trained personnel to complete the installations. Risks related to limited coordination among agencies and stakeholders can lead to inefficiencies in the implementation and impact of the project interventions. Risks related to limited awareness and preparation of communities can impede adoption of the technologies, practices, and information advanced through the project. Climate shocks can lead to a risk of damage to the project investments affecting implementation as well as sustained impact post-project. Finally, there are environmental and social risks related to sediment control, noise, etc. that could affect communities targeted in the project. These are detailed in Section F.3 as well as added in the table below.

193. The proposed project includes several mitigation measures to address these risks. The project will invest in local level mobilisation and technical capacity building for communities and officials to ensure adequate design and implementation of project solutions. Project will implement tested O&M models for community management with clear guidelines and delineation of responsibilities at the outset and focus on building technical and financial capacity for sustained O&M. Developing SOPs for maintenance and data sharing for Agromet stations and other weather information systems will ensure that reliable seasonal forecasts and flood information received by the community. A sound implementation and project management framework will be established to overcome challenges of inter-sectoral coordination. The project will continue engage and build capacity for various stakeholders at national level and sub-national level, including large ASCs, NGOs, FOs, and CBOs. The project support to coordinated planning and investments through water management plans, cascade level water committees, SOPs, etc. will also build the capacity and mechanisms for sustained institutional coordination. The risk of low commitment to and adoption of project solutions is mitigated through inclusive multi-stakeholder consultative approach to project design and implementation, investments in sensitization and capacity building, implementation of community-based management models for project investments, and support to financial viability and sustainability of the solutions. Impact of climate shocks is mitigated through use of reliable forecasts for planning and operation of the infrastructure as well as incorporating design elements to increase the resilience of the investments to extreme events. Finally, detailed ESMP plan (See Annex VI) is established to address environmental and social risks arising from the project.

G.2. Risk Factors and Mitigation Measures

Please describe financial, technical and operational, social and environmental and other risks that might prevent the project/programme objectives from being achieved. Also describe the proposed risk mitigation measures.

Selected Risk Factor 1

Description	Risk category	Level of impact	Probability of risk occurring
Limited capacity among farmer organisations, government officials and other partner organisations to design and implement integrated solutions	Technical and operational	Medium (5.1-20% of project value)	Medium

Mitigation Measure(s)

The project will invest in local level mobilisation and technical capacity building for communities and officials to ensure adequate design and implementation of project solutions. It builds on traditional systems and local knowledge and introduces innovative design elements through a participatory approach. Technical training and capacity building will ensure sustained capacities for design and implementation of project solutions. The mitigation measure should lower the risk level to low.

Selected Risk Factor 2

Description	Risk category	Level of impact	Probability of risk occurring
Inadequate operation and maintenance of the local level community managed interventions can lead to reduced viability and impact of the water and early warning/forecasting solutions	Technical and operational	Low (<5% of project value)	Low
Mitigation Measure(s)			
Project will implement tested O&M models for community management with clear guidelines and delineation of responsibilities at the outset and focus on building technical and financial capacity for sustained O&M. The O&M plan for the project incorporates support for building the O&M capacity through training and strengthening of business models for financial viability of FOs to maintain these systems. Domestic financing, including government financing, is phased in increasingly through the project life-time to ensure post-project O&M as well. The mitigation measure should keep the risk level as low.			
Selected Risk Factor 3			
Description	Risk category	Level of impact	Probability of risk occurring
Limited coordination among agencies and stakeholders can lead to inefficiencies in the implementation and impact of the project interventions	Technical and operational	Low (<5% of project value)	Medium
Mitigation Measure(s)			
A sound implementation and project management framework (through IMC, district and local level project coordination) is established to overcome challenges of inter-sectoral coordination during implementation. The project will continue to engage and build capacity for various stakeholders at national level and sub-national level, including large ASCs, NGOs, FOs, and CBOs. The project support to coordinated planning and investments through water management plans, cascade level water committees, local cultivation (kanna) meetings, SOPs (for water supply management as well as data sharing for EWs and forecasts), etc. will also build the capacity and mechanisms for sustained institutional coordination. The coordination of service delivery through the ASCs, the integrated planning through water management plans, SOPs, and the implementation/project management framework advance institutional coordination to address fragmentation. In addition, each of the project Outputs invests in capacity building of the institutions at national sub-national level to promote the integrated approach.The mitigation measure should lower the risk level to low.			
Selected Risk Factor 4			
Description	Risk category	Level of impact	Probability of risk occurring
Delays in completion of the infrastructure due to issues such as rainfall season and availability of sufficiently trained masons to complete RWH installations.	Technical and operational	Medium (5.1-20% of project value)	Medium
Mitigation Measure(s)			
The project will allocate two months for planning cascade rehabilitation work and develop a time plan for the entire cascade as well as individual reservoirs with local officials (Department of Irrigation and department of Agrarian Development) and FOs of each tank, based on seasonal forecasts. The timetable will ensure that farmer cultivation practises are impacted only during the dry season and for the minimum possible time. To mitigate risk of lack of trained masons, project will mobilize local personnel that were involved in such solutions in the past and institute training to ensure they are capacitated to undertake installation of the solutions. The mitigation measure should keep the risk level as low.			
Selected Risk Factor 5			

Description	Risk category	Level of impact	Probability of risk occurring
Limited awareness and preparation of communities can impede adoption of the technologies, practices, and information advanced through the project	Other	Low (<5% of project value)	Low
Mitigation Measure(s)			
The risk of low commitment to and adoption of project solutions is mitigated through inclusive multi-stakeholder consultative approach to project design and implementation, investments in sensitization and capacity building including technical training, implementation of community-based management models for project investments, and support to financial viability and sustainability of the solutions. The mitigation measure should lower the risk level to low.			
Selected Risk Factor 6			
Description	Risk category	Level of impact	Probability of risk occurring
Climate shocks can lead to a risk of damage to the project investments affecting implementation as well as sustained impact post-project.	Other	Medium (5.1-20% of project value)	Medium
Mitigation Measure(s)			
Farmer Organizations will be trained to combine traditional and modern design elements to the entire village irrigation system to withstand longer dry periods and flash floods caused by intense rainfall. The cascade level water management committees established will develop and implement SOPs for water allocation between multiple users and flood management in a cascade. Changing cropping patterns and technologies is also important to sustaining the benefits. Switching from Yala season rice to other field crops such as onion, watermelon, traditional rice varieties and adoption of water saving modern irrigation methods are promoted through Output 1.The greatest input to enhanced resilience of investments made in Outputs 1 and 2 comes from the climate/weather advisories generated in output 3 which will support farmers to face greater periods of climatic uncertainty by providing timely information. Together with technology and seeds, and community capital developed in output 1 and 2, smallholder farmers should be able to overcome future climatic uncertainty with greater preparation. The mitigation measure should lower the risk level to low.			
Description	Risk category	Level of impact	Probability of risk occurring
Selected Risk Factor 7			
Description			
Lack of financing for operations and maintenance of irrigation systems for sustained impact of investments	Other	Medium (5.1-20% of project value)	Medium
Mitigation Measure(s)			
Generally village irrigation systems are community owned and managed with technical support from Department of Agrarian Development. A strategy for overcoming lack of financing for upkeep and regular upgrade of these systems were discussed at national and field level consultations. This was also discussed under the 'Financial Viability' comment, above, and addressed through project funded activities participatory design and upgrades for the VIS; FO training for O&M and financial management (improved collection of fees from membership) linking with ASCs for financial services; and cascade-level water committees to build capacity for iterative planning. A detailed O&M plan has been developed for the project that combines GCF and domestic resources (with the latter phased in to take over the O&M post-project). The mitigation measures should lower the risk level to low.			
Selected Risk Factor 8			
Description			

Sediment movement during the rehabilitation of irrigation infrastructure	Social and environmental	Medium (5.1-20% of project value)	Medium
Mitigation Measure(s)			
Activities proposed as part of the project build on experiences from a number of ongoing efforts including investments undertaken by the Asian Development Bank, World Bank, IUCN and UNDP across all of Sri Lanka. Past activities were successfully undertaken and the effective methodologies used for irrigation system rehabilitation as part of those projects will be replicated (modified spatially as required). By following a proven practice, the project will result in reduced impacts. To ensure that the sediment is not mobilised through current movement that will result in any significant impacts, it will be necessary to prepare an erosion control sediment plan and install silt curtains to restrict sediment movement from the site. Further, any earthworks should be undertaken during the dry season and compacted sufficiently to reduce sediment movement. The plan should contain aspects including but not limited to the installation of sediment curtains to reduce sediment movement and the quick placement of footing material. These impacts will be spatially and temporally restricted to rehabilitation periods.			
Selected Risk Factor 9			
Description			
Contamination of existing water sources	Social and environmental	Medium (5.1-20% of project value)	Low
Mitigation Measure(s)			
As with the above, to ensure contaminants etc. do not enter waterways and groundwater systems, a water quality monitoring plan and management framework will be developed to ensure chemicals are not released. This will involve testing sediment prior to movement and planning so that the works are not undertaken during rain events. Where rainfall is anticipated, appropriate material should be placed under the sediment prior to excavation to ensure there is no seepage into groundwater systems. The water quality monitoring for the sources will be designed to identify potential impacts so that management measures can be proactively rather than reactively enacted upon.			
Selected Risk Factor 10			
Description			
Construction Noise	Social and environmental	Low (<5% of project value)	Low
Mitigation Measure(s)			
An assessment should consider any sensitive receptors including communities. Further, noise shields should be constructed to reduce the potential for noise to reach these communities if an impact occurs. The noise will predominantly relate to the construction through the rehabilitation of the irrigation network, which will have very limited temporal scales.			
Selected Risk Factor 11			
Description			
Construction of Rainwater Tanks	Social and environmental	Low (<5% of project value)	Low
Mitigation Measure(s)			
Prior to installation, a full site evaluation will be undertaken to assess each site. Appropriate measures will be taken to ensure the specific amount of material is only required, thus, reducing waste. Further, any excavations, which are currently anticipated to be extremely minor, will follow the erosion and sediment control plan contained in the Environmental and Social Management Plan. As such, with the appropriate mitigation measures, it is not anticipated that the component of the work will have any additional impacts.			

Selected Risk Factor 12			
Description			
Construction of Early Warning System	Social and environmental	Low (<5% of project value)	Low
Mitigation Measure(s)			
Prior to installation, a full site evaluation will be undertaken to assess each site. Appropriate measures will be taken to ensure the specific amount of material is only required, thus reducing waste. Further, any excavations, which are currently anticipated to be extremely minor, (eg a small hole poured with concrete to hold the post) will follow the erosion and sediment control plan contained in the Environmental and Social Management Plan. As such, with the appropriate mitigation measures, it is not anticipated that the component of the work will have any additional impacts.			
Selected Risk Factor 13			
Description			
Production of waste	Social and environmental	Low (<5% of project value)	Low
Mitigation Measure(s)			
All used filters and other waste should be managed and placed in an appropriate waste facility, thus reducing any impact. Budget is included for the development of such a facility.			
Selected Risk Factor 14			
Description			
Low accuracy of the forecasts and advisories due to highly dynamic weather conditions for tropical, island country	Other	Medium (5.1-20% of project value)	Low
Mitigation Measure(s)			
Beyond the capacity building for data modeling and forecasting (particular near-casting ability of the Met Department), the project will also support development of multiple advisories for different climate scenarios. The participatory approach to co-development of advisories will enhance the assessment of risks and decision making for agricultural planning based on viable response options. This mitigation measure should lower the risk to low.			
Selected Risk Factor 15			
Description			
Risk of overuse of water in the absence of water tariffs	Technical and operational	Medium (5.1-20% of project value)	Low
Mitigation Measure(s)			
The DAD has documented community system of management of VIS in local languages as a handbook titled “Cultivation Meetings and Minor Irrigation Maintenance” which deals with reducing the irrigation releases in response to rainfall, using rainfall for land preparation etc. While farmers do not pay directly for irrigation water based on its use, individual farmers contribute to a maintenance fund. Decisions such as the use of water or the amount of contribution to the maintenance fund are made collectively. There are also community introduced principles to prevent wastage of water, including fines, as the traditional system does not consider irrigation water as a free good that can be wasted. The current proposal further strengthen this system by helping farmers better understand economic gains of adequate investments into proper maintenance and provides the necessary technical back-up by providing rain gauges and measuring devices. More importantly, the project strengthens the institutional mechanisms including the FOs, cultivation meetings, cascade level water management planning, and cross-sectoral coordination to ensure that collectively, efficient and conservative water management practices are implemented. This mitigation measure will keep the risk low.			
Selected Risk Factor 16			

Description			
Risk of conflict and grievances among beneficiaries around selection and water use.	Technical and operational	Medium (5.1-20% of project value)	Low
Mitigation Measure(s)			
Decision on water sharing is taken with heavy involvement of FOs and it has worked quite well over many years with no known incidence of water conflicts in Sri Lanka. The FOs are linked to women's organizations and youth organizations in the village and decisions are highly participatory. There is an informal system of grievance, where farmers can complaint about officials of FOs or officials of ASCs/DAD to the DAD, divisional and District secretaries. The above mentioned grievances redress system is awell accepted system. Cultivation meetings (called 'kanna' meetings) and FOs have legal recognition, and DAD officials and DS are bound to implement them. Project Activity 2.1 improves the capacity of water-supply support staff at district/divisions, selected partner organizations (NGOs) and CBOs to implement and maintain community-based drinking water related interventions. The activity will facilitate the drinking water needs to be incorporated in to cascade development plans so that water use conflicts can be resolved through cascade farmer committees and water source protection committees facilitated by the project. In addition, in compliance with ESS, the project will establish a Grievance Redress Mechanism, as outlined in the ESMP. This mitigation measure will keep the risk low.			

H.1. Logic Framework.

H.1.1. Paradigm Shift Objectives and Impacts at the Fund level[75]						
Paradigm shift objectives						
Increased climate-resilient sustainable development	The proposed project contributes to climate-resilient water resources development in the Dry Zone of Sri Lanka through the sustained impact of project measures that have high potential for replicability and scale. Overall, the project will contribute to the Fund level impacts of *Increased resilience and enhanced livelihoods of the most vulnerable people, communities, and regions* and *Increased resilience of health and wellbeing, and food and water security*. Combined with government co-financing, GCF resources will support an integrated approach to strengthening the resilience of smallholder farmers in the Dry Zone through three inter-related outputs contributing to climate smart water management. The interventions will directly benefit 704,000 people in three river basins and indirectly benefit at least 840,000 more people living and working in agriculture in the associated districts benefitting from improved access to climate information and early warnings and improved agricultural service delivery. The main outputs of the proposed project are (i) strengthened village irrigation infrastructure and capacities of smallholder farmers for climate-resilient water management and agriculture; (ii) improved access to safe and reliable drinking water through supply systems able to withstand climate change and variability; and (iii) strengthened capacity of Dry Zone farmers to use weather and climate information for agricultural and water management. This integrated approach contributes to strengthened adaptive capacities and improved water security among smallholder farmers in the Dry Zone, a key priority under the Intended National Development Contribution of Sri Lanka to climate change adaptation.					
Expected Result	**Indicator**	**Means of Verification (MoV)**	**Baseline**	**Target**		**Assumptions**
				Mid-term (if applicable)	Final	
Fund-level impacts						
	Total number of direct and indirect beneficiaries (% of whom is female)	Agrarian Services Centres databases on farm households and cropping intensities SMS reach monitored by the District and National Disaster Management Centre Gender-sensitive field surveys undertaken within the targeted river basins and districts			Total 1,950,374[76] (51% of whom is female) 9.6% of the total population of Sri Lanka[77] 770,500[78] (51% of whom is female) (direct)	Completed infrastructure and sustained maintenance for water supply systems Uptake of training and capacity building by provincial, district and ASC officials on water management, climate resilient agriculture packages, flood/drought and management advisories Efficiency and reach of the SMS-based communication system for flood warning and water management advisories

[75] Information on the Fund's expected results and indicators can be found in its Performance Measurement Frameworks available at the following link (Please note that some indicators are under refinement): http://www.gcfund.org/fileadmin/00_customer/documents/Operations/5.3_Initial_PMF.pdf
[76] This total combines direct and indirect beneficiaries.
[77] Total population of Sri Lanka 20,271,464 according to Census of 2012
[78] See footnote 82.

					1,179,874[79] of (51% of whom is female) (indirect)	
A 1.0 Increased resilience and enhanced livelihoods of the most vulnerable people, communities, and regions	**Indicator 1.2** Number of males and females benefiting from the adoption of diversified, climate resilient livelihood options	Agrarian Services Centres databases on farm households and cropping intensities Project baseline, mid-term and end term surveys Gender-sensitive field surveys undertaken within the targeted river basins and districts	0		520,000[80] of which 265,200 are women	Completed irrigation infrastructure and sustained O&M. Uptake of training and capacity building by farmers related to the CSA practices.
A 2.0 Increased resilience of health and well-being, and food and water security	**Indicator 2.3**: Number of males and females with year-round access to reliable and safe water supply despite climate shocks and stresses.	Project baseline, mid-term and end term surveys SMS reach monitored by the District and National Disaster Management Centre Gender-sensitive field surveys undertaken within the targeted river basins and districts	0		517,800[81] of which 264,078 are women	Completed infrastructure and sustained maintenance for water supply systems Uptake of training and capacity building by provincial, district and community stakeholders on water management, flood/drought and management advisories Efficiency and reach of the SMS-based communication system for flood warning and water management advisories

[79] The total number of indirect beneficiaries was derived as follows: Total rural population in 7 districts is 3,423,974; Total population in targeted 3 river basins is: 925,000. So, the base figure for indirect beneficiaries are those outside the river basins (3,423,974-925,000): 2,498,974. Of these: 1) 614545 indirect beneficiaries, farmers, will benefit under Output 1 based on assumptions that training on CSA and interpretation and use of drought advisories will be adopted by other 91 ASCs in the seven target district, outside the river basins. Each ASC targets 6753 farmers based on DAD statistics. 2) Then of the remaining population of potential indirect beneficiaries, which is 1,884,429 (2,498,974-614545), we count the population receiving flood advisories for water management through the SMS services. Assuming 30% penetration of mobile services (see footnote 101 on basis for assumption), we estimate 30% of 1,884,420 (565,328) will receive SMS based early warnings. Therefore, total indirect beneficiaries is 614545 plus 563,328 = **1,179,874**.

[80] See footnote 88.

[81] This is the total number of beneficiaries who receive year round and safe drinking water and whose drinking water supply systems are protected and sustained through flood advisories disseminated through cascade water management committees and through SMS. The number is calculated based on Output 2 and Output 3 beneficiaries avoiding overlaps. To avoid duplication, since the number of beneficiaries of water management and flood advisories of Output 3 (445,500, see footnote 99) are calculated at the river basin level population, we assume this already subsumes the beneficiaries of drinking water systems residing in the river basins (144,700, see footnote 94). Therefore we estimate the target population for this indicator as 445,500 plus the additional 72,300 beneficiaries of drinking water systems outside the river basins, under Output 2. This totals to **517,800** people. Please note that combined target populations from Result Area 1 and 2 does not add up to (and exceeds) total direct beneficiaries as these numbers both count farmers that benefit from CSA and water advisories. The total direct beneficiary number removes this duplication.

H.1.2. Outcomes, Outputs, Activities and Inputs at Project/Programme level						
				Target		
Expected Result	**Indicator**	**Means of Verification (MoV)**	**Baseline**	Mid-term (if applicable)	Final	**Assumptions**
Project/programme outcomes	**Outcomes that contribute to Fund-level impacts**					
A7.0 Strengthened adaptive capacity and reduced exposure to climate risks	7.1: Extent to which vulnerable households, communities and businesses use improved strategies and activities to respond to climate variability and climate change	Project baseline, mid-term and end term surveys Gender-sensitive field surveys undertaken within the targeted river basins and districts Extent to which the advisories are used will be evaluated through qualitative assessment (such as scorecard)	0	422,664[82]	770,500[83] of which 392,955 are women	Completed infrastructure and sustained maintenance for VIS Agrarian Service Centres are able to reach all small holder farmer families in their areas with climate risk information and agriculture packages. There is continued commitment and uptake of the information by targeted communities in the project.
Project/programme outputs	**Outputs that contribute to outcomes**					
Output 1: Village irrigation infrastructure and capacities of smallholder farmers strengthened for climate-resilient water	Extent of minor irrigation under targeted cascades with increased cropping intensity (CI<1.6)	Field reports of DAD extension service Household surveys through ASCs	0 CSA packages are	8875 ha[85]	9750[88]ha	Village irrigation upgradation is completed on schedule without large disruptions from extreme weather events or from bureaucratic delays in approvals etc.

[82] The mid-term target calculates that by the fourth year of the project 60% of the targeted population receiving climate resilient agriculture advisories, water management advisories that support adaptive strategies for both irrigation and drinking water.

[83] The target combines the direct beneficiaries in the three river basins under the three outputs, avoiding overlaps. This was calculated using: (i) the total number of beneficiaries reached under Output 1 which is 520,000 (which subsumes 144700 of the 217000 beneficiaries from Output and overlaps with the 520,000 beneficiaries of agricultural advisories under Output 3); (ii) the additional drinking water beneficiaries outside river basin (72,300) not counted under Output 1; and (iii) the additional number of river basin population receiving flood advisories through cascade level water committees and SMS and not counted under Output 1. This would be the non-farming population of the total reached under Output 3 which is about 40% of 445,500 (178,200). The total number of direct beneficiaries is 520,000+72,300+178,200 = **770,500**.

[85] The project is upgrading 325 village irrigation systems in 30 cascades. Each of these VIS currently does not support farmers to complete one full season. The minor season, which is generally dry depends heavily on stored water in the village reservoirs. If there is not sufficient storage, minor season cultivation is abandoned. Therefore cropping intensity, measured by the number of times the irrigated downstream is fully cultivated, is less than 1. By upgrading storage and efficient water allocation, project aims to increase cropping intensity in these village irrigation systems to 1.6 or more, by improving the ability to use the downstream lands during the minor season. According to Department of Agrarian Development each of the Village Irrigation systems has 25-30 hectares as a median command area. So the targets reflect the extent of command area that will directly benefit from the improved irrigation potential and water availability through VIS upgrade. The full extent is 9750 ha but the project assumes that by the mid-term of delivery, around 80% of the farm fields would have increased production in the two seasons.

[88] The project is upgrading 325 village irrigation systems in 30 cascades. Each of these VIS currently does not support farmers to complete one full season. The minor season, which is generally dry depends heavily on stored water in the village reservoirs. If there is not sufficient storage, minor season cultivation is abandoned. Therefore cropping intensity, measured by the number of times the irrigated downstream is fully cultivated, is less than 1. By upgrading storage and efficient water allocation, project aims to increase cropping intensity in these village irrigation systems to 1.6 or more, by improving the ability to use the downstream lands during the minor season. According to Department of Agrarian Development each of the Village Irrigation systems has 25-30 hectares as a median command area. So the targets reflect the extent of command area that will directly benefit from the improved irrigation potential and water availability through VIS upgrade. The full extent is **9750** ha by end of the project.

management and agriculture	Number of male and female farmers reached through dissemination of climate resilient agriculture technology packages No of women farmers implementing climate resilient agriculture technologies and practices	Field inspection visit reports of the project Update of Village Irrigation System database of DAD	currently not being disseminated 0[84]	416,000[86] of which 212,160 are women 13,209[87]	520,000[89] of which 265,200 are women[90] 16,677[91]	Agrarian Service Centres are able to reach all small holder farmers through Farmer Organisations Climate smart packages and agriculture advisories are available in every Agrarian Services Centre
2. Improved access to safe and reliable drinking water through supply systems able to withstand climate change and variability	Number of households with year round access to reliable and safe water supply Number of women engaged in managing and maintaining community	Field inspection reports of the project DS (Divisional Secretariat) level social indicators update- access to safe drinking water.	0[92]	130,200[94]	217,000 of which 72300 are based outside river basins[95]	Completed infrastructure and sustained maintenance for water supply systems Uptake of training and capacity building by women enterprises on sustained O&M.

[84] There are no field-level interventions promoting the adoption of climate resilient practices among women farmers currently in 30 cascades and 325 VIS targeted by the project.

[86] Output 1 beneficiary number is calculated based on the assumption that the total number of small holder farmers working in village irrigation systems in the three river basins (520,000) will have access to climate resilient agriculture packages disseminated through the 77 Agrarian Service Centres. The mid-term target therefore is calculated on the basis that 80% of this target would be reached by the end of year 04. No of women farmers is 51.2 % of the total.

[87] The project through activity 1.3 will provide investments to women farmers to adopt agro-technology packages that will increase income and food security. This includes 300 women entrepreneurs engaged in value addition of climate resilient crops, 822 small-farmer seed production facilities, 4950 demonstrations of improved home gardens, 8250 low-cost drip systems and 355 farm field water management demonstrations. Another 2000 women will benefit from agro-processing technologies. The total number of beneficiaries is 16,677 of which 75% will be reached by end of year 4

[89] Output 1 beneficiary number is calculated based on the assumption that the total number of small holder farmers working in village irrigation systems in the three river basins (**520,000**) will have access to climate resilient agriculture packages disseminated through the 77 Agrarian Service Centres (each serving about 6753 farmers). The mid-term target therefore is calculated on the basis that 100% of this target would be reached by the end of year 7.

[90] Output 1 beneficiary number is calculated based on the assumption that the total number of small holder farmers working in village irrigation systems in the three river basins (520,000) will have access to climate resilient agriculture packages disseminated through the 77 Agrarian Service Centres (each serving about 6753 farmers). The mid-term target therefore is calculated on the basis that 100% of this target would be reached by the end of year 7. No of women farmers is 51.2 % of the total.

[91] The project through activity 1.3 will provide investments to women farmers to adopt agro-technology packages that will increase income and food security. This includes 300 women entrepreneurs engaged in value addition of climate resilient crops, 822 small-farmer seed production facilities, 4950 demonstrations of improved home gardens, 8250 low-cost drip systems and 355 farm field water management demonstrations. Another 2000 women will benefit from agro-processing technologies. The total number of beneficiaries is **16,677**.

[92] Project investments will go in to communities that do not currently have access to year round and safe (treated, sterilized and filtered) water. So the baseline value is 0 (based on the year-round availability – these communities do have access for some of the year and for these periods, they purchase water)

[94] The mid-term target for drinking water access is 60% of the total beneficiaries reached.

[95] There will be **217,000** (includes beneficiaries of advanced purification and filtration systems: 131,000; CWSS: 70,000; and RWH: 16,000) people benefitting from the different drinking water interventions that the project will invest in linked to the village irrigation systems. Of these, geographically, 70% of the systems (and therefore 144,700 beneficiaries) are located within the 3 river basins and remaining 30% of them or 72,300 of these beneficiaries will be located outside the river basin boundaries but within the associated 07 districts, targeting divisions with high vulnerability to CKDu, salinity and poverty. The 217,000 population includes the beneficiaries of 4000 rainwater harvesting tanks (individual households) and 35 community managed water supply schemes and 125 advanced filtration systems for locations with serious water quality issues.

	drinking water supply schemes	District reports of NWSDB and DNCWS Gender-sensitive field surveys undertaken within the targeted river basins and districts	<1000[93]	>10,000	>20,000[96]	
3. Capacity of Dry Zone farmers strengthened to use weather and climate information for agricultural and water management	Number of female and male farmers reached through seasonal forecast for agriculture planning Number of female and male farmers receiving advisories for water management	Gender-sensitive field surveys undertaken within the target districts, representative of the local population Post disaster needs assessment reports at Divisional Secretariat level Extent to which the advisories are used will be evaluated through qualitative assessment	0[97] 0[98]	156,000 of which 79,560 are women 133,650 of which 68,161 are women	520,000[99] of which 265,200 are women 445,500[100] of which 227,205 are women	Agro-hydro-meteorological infrastructure established implemented according to the timeline. Uptake of training and capacity building on development of agricultural and flood/drought management advisories Efficiency and reach of the SMS-based communication system for flood warning and water management advisories

[93] While many water supply schemes are run by women-led CBOs field surveys showed that they need capacity development and institutional strengthening support to effectively manage the O&M and business model of community water supply. Active engagement of women in the project target river basins is estimated as less than 1000 women.

[96] The project aims to provide training and capacity building and institutional strengthening to at least 400 women led CBOs by the project's end. Each CBO will have an estimated 50 members of whom at least 5 will earn an income from maintaining the water supply scheme.

[97] The developed seasonal forecasts (as of Maha 2015) are disseminated to the PDOA but is yet to reach the farmer organizations with practical and timely advice on adaptation to the forecast.

[98] There is currently no SMS service for flood early warnings.

[99] The forecasts and agricultural advisories will be disseminated through 77 Agrarian Services Centres in the three river basins. Farmers will contribute to the preparation of these advisories through ASCs and have access to the advisories through seasonal cultivation meetings at each village irrigation system, twice a year. These advisories will reach **520,000** small holder famer population who are connected to the 77 ASCs (serving about 6753 farmers each) for service delivery through both agriculture and agrarian services extension services which also will deliver tailored, climate resilient agro-technology packages to these farmers under Output 1.

[100] The Cascade Level Committees are the primary target for flood advisories for water management. Each cascade level water committee will reach around 4800 people (each cascade= 12 VIS/ each VIS=100 familiesx4 members) comprising of farmers benefitting from village irrigation systems, farmers working in non-irrigated lands and non-farming households. The project will form cascade water management committees bringing together the local-level representatives of drinking water supply systems and Farmer Organisations in 50 cascades. This is a total of 240,000 people directly reached through such committees. Of the remaining river basin population (925,000-240,000=685000), we also count those people benefiting from SMS service, Given the penetration of mobile phones according to statistics and recent survey (http://www.tradingeconomics.com/sri-lanka/mobile-cellular-subscriptions-per-100-people-wb-data.html and http://dbsjeyaraj.com/dbsj/ archives/ 20172) is round 40-50%, we use a conservative estimate of 30% as actually receiving the SMS advisories. Therefore, this amounts to 205,500. The total number of beneficiaries from water related EWs and advisories is a sum of those reached by cascade level committees and SMS. **(445500)**

		(such as scorecard)				

Activities	**Description**	**Inputs**	**Description**
1.1 Improve technical capacity and knowledge management targeting ASCs, local field officials and community organisations for climate-risk informed water management and climate-smart agriculture	Activity will develop cascade level water management plans and guidelines in a participatory, multi-stakeholder approach and train farmer organizations (FOs) and other CBOs (women's groups) to implement and maintain the project investments. The activity will improve collaboration for planning and equitable water sharing between users in a cascade. ASCs in the river basin will be developed as knowledge and communication hubs, including supporting cross-district, cross ethnic experience sharing through exchange field visits and field training programmes.	1.1.1 Develop multi-stakeholder, climate-risk informed cascade level water resources development and management plans for 50 cascades in target districts 1.1.2 Develop technical guidelines for climate-resilient, water management (irrigation and drinking water) and standard operating procedures for water management at cascade level and water allocation based on seasonal forecasts 1.1.3 Build awareness and mobilize FOs and women's groups to implement and maintain cascade water resources plans and SOPs 1.1.4 Train district (100), ASC (500) and FO officials/ lead farmers (975 in 50 cascades) to plan and implement VIS upgrading and management taking CC risks into account and including financing and business development. 1.1.5 Training of Trainers (75 District Officials, ASC staff and FO representatives) for climate resilient crop and input solutions based on seasonal forecasting 1.1.6 Strengthen 77 ASCs as local knowledge hubs for the project and as coordination and communication mechanism for the climate-resilient integrated solutions	Inputs are designed to improve the capacities of local level actors- field officers, farmer organizations and women's groups- to develop integrated water management plans for 50 cascades. The plans and guidelines will be implemented through cascade level farmer committees that will include men, women and youth and local field officers. The activity invests in training of trainers and farmer training programmes to ensure design, implementation, and O&M of VIS and adoption of agriculture packages. It also invests in awareness building, exchange visits, and knowledge generation and sharing to support integrated water management, climate resilient agriculture and input/crop selection based on physical parameters, water availability, climatic conditions and forecasts.
1.2 Improve resilience of and upgrade village irrigation systems in the identified cascades	Mapping of individual irrigation systems, designing upgrade elements based on the cascade level plans and combining traditional and new technology design elements to upgrade 325 village irrigation	1.2.1 Rapid participatory appraisal and mapping of each village irrigation system (VIS) to determine upgrading priorities incorporating CC risks	VIS are mapped and design and implementation of upgrades are undertaken. FOs are

including restoration of upstream watershed.	systems including the upstream catchment. Undertake O&M.	1.2.2 Develop climate-risk informed, VIS-specific intervention plans linked to cascade water management plans 1.2.3 Upgrade and climate-proof325 village irrigation systems 1.2.4 Develop a multi-year maintenance and financing plan for each VIS 1.2.5 Undertake participatory O&M (FOs and DAD) taking into account evolving CC risks	supported to develop maintenance and financing plans to undertake O&M.
1.3 Develop and disseminate climate resilient agricultural practices with targeted enterprise development for women	The activity will support government extension services to develop and widely broadcast demand-driven, tested resilient agriculture support packages which includes resilient crops (seeds), organic inputs, soil and water management technologies and market oriented agro-processing technologies. Targeted implementation of these packaged will be supported for women smallholders develop value-chains and market linkages. Resilient agriculture practices recognize the need to address climate-related factors (drought and flood resistant crops, shorter duration field crops) along with non-climate drivers for safe and chemical-free agriculture that contributes to long-term improvement of water quality.	1.3.1 Mapping of farming systems and communities to support CC resilient crop and input selection under each ASC 1.3.2 Develop and disseminate (through ASCs) tailored climate resilient agriculture practices 1.3.3 Targeted implementation of tailored climate resilient agriculture packages through women farmers 1.3.4 Establish 800 farmer-level seed nurseries for resilient crops 1.3.5 Develop participatory market mapping for climate resilient crops 1.3.6 Train 400 women in value addition, marketing and business development for climate resilient agriculture products	Agro-technology packages for climate resilient crops developed by the Department of Agriculture will be broadcast through 77 Agrarian Services Centres in the three river basins. Farmers, especially women farmers, will be trained through targeted implementation, improved extension services and market linkages to adopt water saving methods of cultivating, such as low-cost drip systems and agro-product value addition. These inputs will be delivered in collaboration in collaboration with local NGOs, local ASCs (Agrarian Services Centre) and Provincial Departments' of Agriculture.
2.1 Improve capacity of water-supply support staff at district/divisions, selected partner organisations (NGOs) and CBOs to implement and maintain community-based drinking water related interventions	Village irrigation reservoirs are a key source of drinking water in the Dry Zone. As such, drinking water needs should be planned in to the cascade water management plans in Activity 1 and local officials, women-led CBOs strengthened to deliver (implement and maintain) drinking water solutions at village level, and ensure water quality does not deteriorate due to agricultural or other activities in the water source catchment.	2.1.1 Training of cascade-level water committees and the divisional officers on integrating climate-risks and adaptation options for drinking water access and quality into the sub-basin water resources development planning 2.1.2 Develop climate-risk informed, cascade-level water supply source protection plans through water source protection committees 2.1.3 Train women-led CBOs in villages to design, develop and maintain rural, climate-resilient drinking water supply schemes 2.1.4 Train local masons to construct ferro-cement rainwater harvesting tanks for domestic purposes 2.1.5 Surveys, including water quality testing to site drinking water supply schemes	The inputs will facilitate the drinking water needs to be incorporated in to cascade development plans so that water use conflicts can be resolved through cascade farmer committees and water source protection committees facilitated by the project. Training will include financial management to run water supply schemes as rural enterprises, technical upkeep of systems, and regular refresher trainings at DNCWS to promote O&M best practices. The inputs also account for surveys of feasible locations and quality for siting of

			drinking water systems investments in Activity 2.2
2.2 Implement sustainable, climate-resilient drinking water solutions through CBOs and government agencies	This activity will expand the coverage of community- managed treatment facilities for water extracted from irrigation systems and invest in domestic rainwater harvesting (RWH) systems to supplement drinking water during prolonged dry periods.	2.2.1 Design and implement 35 climate-resilient community water supply schemes 2.2.2 Install 125 water treatment and purification systems to existing drinking water intakes to ensure quality and safety. 2.2.3 Construct 4,000 household rainwater harvesting units of 5000 liters for women-headed or disability or chronic disease-affected households 2.2.4 Enhance water quality monitoring and source protection through source protection committees, incorporating CC risks and impacts	The inputs are largely investments in rural water supply schemes, and improved water treatment and purification schemes and domestic rainwater harvesting units. These schemes will be fully integrated in to the cascade water management plan and the dry-period water requirement managed by FO and CBO together based on advisories generated in 3.2 below. Water source protection committees will be created through activity 2.1.2 will be mobilized here with equipment for quality testing and financing for source monitoring.
3.1 Establish effective monitoring systems for drought, floods and water management	Installing, operating and maintaining monitoring equipment in key catchments and VIS systems. Training and capacity building of field officers, staff and FOs to operate and maintain equipment. Training on developing weather and seasonal forecasting capabilities at DoM.	3.1.1 Training of forecasters to apply/develop new statistical and dynamical approaches to seasonal forecasting of drought and agromet related parameters 3.1.2 Training of forecasters to apply/develop Model Output Statistics (MOS) and skill testing to weather forecasts of high intensity rainfall and flooding 3.1.3 Training of field officers (DAD, DoA, DoM, ID) on operations & maintenance of equipment 3.1.4 Install 5 automatic agro-meteorological stations in key agricultural zones to monitor weather and climate conditions in real time 3.1.5 Install 10 automatic rainfall gauges to improve the coverage for rainfall monitoring in the 3 river basins 3.1.6 Install and operate 50 automated water level sensors to improve the monitoring capabilities of water levels in the 3 river basins 3.1.7 Install and operate 330 water level and rainfall gauges in VIS, operated by FOs 3.1.8 Install and operate 8 stream gauges and rainfall sensors in the 3 river basins to improve knowledge of flows and potential downstream flooding	Installing and operating a range of meteorological and hydrological monitoring equipment, covering the cascade systems and downstream. This will help to improve knowledge of the current status of weather and hydrology, which in turn can serve as the basis for making forecasts, calibrating satellite data and hydrological models. Training DoM, DAD, DoA and ID staff to operate and maintain these systems will ensure sustainability and contribute to successful implementation of the O&M plan. Training to improve the forecasting capabilities of DoM will further ensure that DoM uses the technology available to it to produce the accurate and skillful forecasts.
3.2 Co-develop and disseminate weather- and climate-based advisories for agricultural and water management through ASCs and FOs to farmers	Co-development of information requirements for agricultural planning and water management with FOs, and ASCs. Development of satellite-based rainfall estimates to enhance coverage of areas without rainfall monitoring equipment.	3.2.1 Sensitization of communities through FOs and ASCs, for uptake of agromet information and advisories 3.2.2 Co-development of information requirements through ASCs (FOs, DoM, DAD, DoA), including training of trainers to	Information requirements of ASCs and FOs will be ascertained through participatory meetings and trainings designed

and village water managers	Development of new advisories and warnings for both agriculture and water management and dissemination through media including SMS and radio. Central repository for collected data and GIS-based tools developed to combine weather and climate data with exposure and other information sources, including IWMI drought monitoring. Establishment of protocols and SOPs for generating, sharing and using weather data and information between national agencies (DoM, DAD, ID and DMC) and ASCs/FOs.	understand and use advisories 3.2.3 Generation and operationalizing of satellite-based estimates of rainfall, including training of trainers to ensure DoM staff are able to access and use the information 3.2.4 Development of advisories for water management, including inter-agency working groups 3.2.5 Development of advisories for agriculture, including inter-agency working groups 3.2.6 Synthesize and broadcast radio and TV shows on agricultural best practices linked to weather and seasonal forecasts 3.2.7 Synthesize and disseminate flood warnings and water-related information through mobile and other platforms 3.2.8 Develop procedures for combining data collected through the central repository to identify risks using GIS-based tools. 3.2.9 Training and development for DOM/DAD/ DoA/ID staff to access IWMI drought monitoring information and combine with locally collected drought related information and forecasts 3.2.10 Market study to establish potential revenue generating services for agricultural, water management and flood advisories/warnings in the 3 river basins	to understand the way weather and climate information is used for decision making in agriculture and water management. Satellite-based estimates of rainfall will be used to extend advisories to areas not covered by the ground-monitoring network, hence reducing reliance on the continual operation of the network. Advisories for agriculture and water management will be developed through working groups and a separate development process to ensure data is communicated in useful forms. Different media will be used for dissemination to maximize the potential reach to all parts of society, including women. A market study will lay the groundwork for future work to capitalize on using new advisories as a source of revenue.

3.3 Develop climate-risk management and response measures to advisories and forecasts for agriculture, water management and flooding in cascade systems	Address capacity barriers at local level to plan for and identify response measures to warnings and advisories. This activity will focus on identifying responses to floods, through mapping flood inundation levels, as well as developing plans, which identify appropriate spill areas in cascade systems and agricultural assets and infrastructure at risk. It will also develop response plans for agriculture to seasonal forecasts and associated advisories, as well as appropriate water management options. Coordination meetings and SOPs between DoM, DAD, DoA, DMC and ID at the district level will be developed to ensure appropriate coordination takes place.	3.3.1 Conduct inundation area mapping, including assets, property and services at risk from flooding under different flooding scenarios 3.3.2 Design and implement SOPs at the district to enable coordination of responses to agricultural and water management advisories, between DoM, DAD, DoA, DMC and ID. 3.3.3 Develop community/FO based response plans for agriculture and water management, including stakeholder meetings at ASCs, which integrate advisories and forecast products, as well as potential changes to climate 3.3.4 Develop flood response measures for VIS/drinking water systems (DoM, DAD, ID). 3.3.5 Develop flood preparedness measures to protect assets and agricultural infrastructure in 30 cascades.	Flood inundation mapping will identify areas that experience floods under different water levels and will form the basis for identifying assets and infrastructure at risk. This risk information will be included in the central repository and GIS data server. SOPs and coordination meetings between DoM, DAD, DoA, DMC and ID will ensure that the consequences of flood mitigation measures in the cascades e.g. spill releases, will be understood and coordinated between agencies. Response plans will be developed and mitigation measures identified which will be institutionalized and disseminated amongst communities and households so that appropriate responses to warnings are understood.

H.2. Arrangements for Monitoring, Reporting and Evaluation

194. Project-level monitoring and evaluation will be undertaken in compliance with the UNDP POPP and the UNDP Evaluation Policy. The primary responsibility for day-to-day project monitoring and implementation rests with the Project Manager. The Project Manager will develop annual work plans to ensure the efficient implementation of the project. The Project Manager will inform the Project Board and the UNDP Country Office of any delays or difficulties during implementation, including the implementation of the Monitoring & Evaluation (M&E) plan, so that the appropriate support and corrective measures can be adopted. The Project Manager will also ensure that all project staff maintain a high level of transparency, responsibility and accountability in monitoring and reporting project results.

195. The UNDP Country Office will support the Project Manager as needed, including through annual supervision missions. The UNDP Country Office is responsible for complying with UNDP project-level M&E requirements as outlined in the UNDP POPP. Additional M&E, implementation quality assurance, and troubleshooting support will be provided by the UNDP Regional Technical Advisor as needed. The project target groups and stakeholders including the NDA Focal Point will be involved as much as possible in project-level M&E.

196. A project inception workshop will be held after the UNDP project document is signed by all relevant parties to: a) re-orient project stakeholders to the project strategy and discuss any changes in the overall context that influence project implementation; b) discuss the roles and responsibilities of the project team, including reporting and communication lines and conflict resolution mechanisms; c) review the results framework, re-assess baselines as needed, and discuss reporting, monitoring and evaluation roles and responsibilities and finalize the M&E plan; d) review financial reporting procedures and mandatory requirements, and agree on the arrangements for the annual audit; e) plan and schedule Project Board meetings and finalize the first year annual work plan. The Project Manager will prepare the inception report no later than one month after the inception workshop. The final inception report will be cleared by the UNDP Country Office and the UNDP Regional Technical Adviser, and will be approved by the Project Board.

197. A project implementation report will be prepared for each year of project implementation. The Project Manager, the UNDP Country Office, and the UNDP Regional Technical Advisor will provide objective input to the annual PIR. The Project Manager will ensure that the indicators included in the project results framework are monitored annually well in advance of the PIR submission deadline and will objectively report progress in the Development Objective tab of the PIR. The annual PIR will be shared with the Project Board and other stakeholders. The UNDP Country Office will coordinate the input of the NDA Focal Point and other stakeholders to the PIR. The quality rating of the previous year's PIR will be used to inform the preparation of the next PIR. The final project PIR, along with the terminal evaluation report and corresponding management response, will serve as the final project report package. Semi-annual reporting will be undertaken in accordance with UNDP guidelines for quarterly reports that are produced by the project manager.

198. An independent mid-term review process will be undertaken and the findings and responses outlined in the management response will be incorporated as recommendations for enhanced implementation during the final half of the project's duration. The terms of reference, the review process and the final MTR report will follow the standard templates and guidance available on the UNDP Evaluation Resource Center. The final MTR report will be cleared by the UNDP Country Office and the UNDP Regional Technical Adviser, and will be approved by the Project Board. The final MTR report will be available in English. An independent terminal evaluation (TE) will take place no later than three months prior to operational closure of the project. The terms of reference, the review process and the final TE report will follow the standard templates and guidance available on the UNDP Evaluation Resource Center. The final TE report will be cleared by the UNDP Country Office and the UNDP Regional Technical Adviser, and will be approved by the Project Board. The TE report will be available in English. The UNDP Country Office will include the planned project terminal evaluation in the UNDP Country Office evaluation plan, and will upload the final terminal evaluation report in English and the management response to the public UNDP Evaluation Resource Centre (ERC) (www.erc.undp.org). The MTR and TE will be carried out by an independent evaluator. The evaluation report prepared by the independent evaluator is then quality assessed and rated by the UNDP Independent Evaluation Office.

199. The UNDP Country Office will retain all M&E records for this project for up to seven years after project financial closure in order to support ex-post evaluations. A detailed M&E budget, monitoring plan and evaluation plan will be included in the UNDP project document.

200. A key tool for MRV for the project is the field reports and gender-sensitive impact surveys that will be conducted (by PMU, Gender Officer, and DAD field level extension officers) throughout the project to monitor progress of implementation and progress towards the expected outputs and outcomes. To monitor and verify the irrigation systems rehabilitation and adoption of climate-smart agriculture packages, field inspection of infrastructure sites will be conducted by DAD through district offices and ASCs. Installations are captured in the village irrigation system database of DAD that will be reviewed during the mid-term and final evaluations to report on progress. Agrarian Services Centres databases on farm households and cropping intensities will also be reviewed for progress on reach of agricultural practices and improved productivities. Household surveys will also be conducted through the ASCs to monitor the progress and capture the impact of the project. The progress and impact of the drinking water solutions will be monitored through the field inspection reports on infrastructure established, the district reports of NWSDB and DNCWS, the Divisional Secretariat's database on level and progress of social indicators such as access to and safety of drinking water, and gender-sensitive field surveys undertaken within targeted communities and river-basins. Finally, the development and diffusion of advisories, early warnings, and forecasts will be monitored through field surveys conducted by MoD and ASCs (for communities, end-user farmers and non-farmers, extension services, etc.), reports from DoM/MoD, and SMS services.

201. While the Sri Lanka CO, through its ongoing presence in the country, will continue to engage with the GoM, there is no provision for human and financial resources to undertake formal reporting post-completion of the project. Information, where available, will be communicated to the GCF Secretariat as feasible.

I. Supporting Documents for Funding Proposal

☒ NDA No-objection Letter **Annex I**

☒ Feasibility Study **Annex II**

☐ Integrated Financial Model that provides sensitivity analysis of critical elements **Annex III** ***Not Applicable*** for this project

☒ Confirmation letter or letter of commitment for co-financing commitment **Annex IV**

☒ Term Sheet (including cost/budget breakdown, disbursement schedule, etc.) **Annex V (a)**

☒ Confirmation as per AMA **Annex V (b)**

☒ Environmental and Social Impact Assessment (ESIA) or Environmental and Social Management Plan
Social and Environmental Screening Template **Annex VI (a)**
Environmental and Social Management Plan **Annex VI (b)**

☒ Appraisal Report or Due Diligence Report with recommendations **Annex VII**

☐ Evaluation Report of the baseline project **Annex VIII** ***Not Applicable*** for this project

☒ Map indicating the location of the project/programme **Annex IX**

☒ Timetable of Project/Programme Implementation **Annex X**

☒ Project/Programme confirmation **Annex XI** ***Forthcoming***

Additional information

☒ Economic Analysis **Annex XII (a), Annex XII (b)**

☒ Additional Background Details **Annex XIII**

☒ Responses to GCF comments on Proposal **Annex XIV**

☒ Letter of Endorsement from UNDP Senior Management **Annex XV**

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

No-objection letter issued by the national designated authority

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மகாவலி அபிவிருத்தி மற்றும் சுற்றாடல் அமைச்சு
Ministry of Mahaweli Development and Environment

"සම්පත්පාය", අංක 82, රජමල්වත්ත පාර, බත්තරමුල්ල, ශ්‍රී ලංකාව
"சம்பத்பாய", இல. 82, ரஜமல்வத்த வீதி, பத்தரமுல்லை, ஸ்ரீ லங்கா.
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මගේ අංකය / எனது இல / My No – 04/04/05/357

ඔබේ අංකය / உமது இல / Your No –

දිනය / திகதி / Date – 24.03.2016

The Secretariat
Green Climate Fund

Dear Sir/ Madam,

Re: Funding Proposal to the Green Climate Fund (GCF) by the United Nations Development Programme (UNDP) regarding "Strengthening the Resilience of Smallholder Farmers in the Dry Zone to Climate Variability and Extreme Events through an Integrated Approach to Water Management" project

We refer to the project "*Strengthening the resilience of smallholder farmers in the Dry Zone to climate variability and extreme events through an integrated approach to water management*" in Sri Lanka, as included in the funding proposal submitted by UNDP to the Ministry of Mahaweli Development and Environment (MMDE) on the 18th of March 2016.

The undersigned is the duly authorized representative of the Ministry of Mahaweli Development and Environment, the National Designated Authority of Sri Lanka. Pursuant to GCF decision B. 08/10, the content of which we acknowledge to have reviewed, hereby communicate our no-objection to the project as included in the funding proposal.

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

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

We also confirm that our national process for ascertaining no-objection to the project as included in the funding proposal has been duly followed. We acknowledge that this letter will be made publicly available on the GCF website.

Thanking you
Yours Sincerely

Udaya R. Seneviratne
Secretary, MMDE and National Designated Authority for GCF

"This great earth and the flora on it equally belong to the man and the birds flying in the sky, the quadrupeds and all creatures living on earth"

Environmental and social report(s) disclosure

Basic project/programme information	
Project/programme title	Strengthening the resilience of smallholder farmers in the Dry Zone to climate variability and extreme events through an integrated approach to water management
Accredited entity	United Nations Development Programme (UNDP)
Environmental and social safeguards (ESS) category	Category B
Environmental and social report disclosure information	
Date of disclosure on accredited entity's website	2016-05-03
Language(s) of disclosure	English, Sinhala and Tamil
Link to disclosure	http://www.lk.undp.org/content/srilanka/en/home/presscenter/articles/2016/05/03/Environmental-and-Social-Management-Plan-for-the-proposed-GCF-Project/
Other link(s)	http://