Meeting of the Board
21 – 24 October 2024
Songdo, Incheon, Republic of Korea
Provisional agenda item 10

GCF/B.40/02/Add.11

30 September 2024

Consideration of funding proposals – Addendum XI

Funding proposal package for FP249

Summary

This addendum contains the following seven parts:

a) A funding proposal titled "Strengthening climate Resilience of Vulnerable Agriculture Livelihoods in Iraq (SRVALI)";
b) No-objection letter issued by the national designated authority(ies) or focal point(s);
c) Environmental and social report(s) disclosure;
d) Secretariat's assessment;
e) Independent Technical Advisory Panel's assessment;
f) Response from the accredited entity to the independent Technical Advisory Panel's assessment; and
g) Gender documentation.

Table of Content

Funding Proposal

Table 5 Project/Programme title:	Strengthening climate Resilience of Vulnerable Agriculture Livelihoods in Iraq (SRVALI)
Country:	Republic of Iraq
Accredited Entity:	Food and Agriculture Organization of the United Nations
Date of first submission:	December 31, 2021
Date of current submission	June 18, 2024
Version number	Version 0.5

Contents

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

Please submit the completed proposal to:

fundingproposal@gcfund.org

Please use the following name convention for the file name:

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

LIST OF ACRONYMS	
AE	Accredited Entity
AMA	Accreditation Master Agreement
BCM	Billion Cubic Meters
BOO	Build, own, operate model
CRA	Climate Resilient Agriculture
CWA	Climatic Water Availability
CWW	Climate Wise Women
DOWR	Directorate of Water Resources
EE	Executing Entity
ESCWA	Economic and Social Commission for West Asia
ESIA	Environment and Social Impact Assessment
ESMF	Environment and Social Management Framework
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
ESS	Environmental Social Safeguard
FAO	Food and Agriculture Organization
FFS	Farmer Field Schools
FLO	Funding Liaison Officer
FP	Funding Proposal
GAC	Global Affairs Canada
GAP	Gender Action Plan
GCF	Green Climate Fund
GDDCP	Global Daily Downscaled Climate Projections
GDP	Gross Domestic Produce
GHG	Greenhouse Gas Emission
GOI	Government of Iraq
ICT4CC	Information Communication Technology for Climate Change
IDP	Information Disclosure Policy
IDPs	Internally Displaced Persons
IFAD	International Fund for Agricultural Development
IME	Iraq Ministry of Electricity
INES	Iraq National Energy Strategy
IRAKIN	Iraq Rural and Agricultural Knowledge Exchange Network
IRMF	Integrated Results Management Framework
JICA	Japan International Cooperation Agency
LLC	Land-lease contract
LTO	Dead Technical Officer
MOA	Ministry of Agriculture
MOE	Ministry of Environment
MOP	Ministry of Planning
MOWR	Ministry of Water Resources
NCCC	National Centre for Climate Change
NDA	National Designated Authority
NPV	Net Present Value
PMU	Project Management Unit
PNCCC	Permanent National Committee for Climate Change
PTF	Project Task Force
PV	Photovoltaic
PSDS	Private Sector Development Strategy (2014-2030)
RCP	Representative Concentration Pathway
RES	Renewable Energy Sources
RFP	Request for Proposals
RNE	Regional Office for the Near East and North Africa
SEAH	Sexual Exploitation, Abuse and Harassment
SIDA	Swedish International Development Cooperation Agency
SPIS	Solar Powered Irrigation Systems
SPV	Special Purpose Vehicle
SRVALI	Strengthening climate Resilience of Vulnerable Agriculture Livelihoods in Iraq
TCC	Transmission Connection Contract
TWh	Terawatt hours
UNFCC	United Nations Framework Convention on Climate Change
WFP	World Food Programme
WUA	Water User Association

A. PROJECT/PROGRAMME SUMMARY

A.1. Project or programme	Project	**A.2. Public or private sector**	Public
A.3. Request for Proposals (RFP)	*If the funding proposal is being submitted in response to a specific GCF Request for Proposals, indicate which RFP it is targeted for. Please note that there is a separate template for the Simplified Approval Process and REDD+.* Not applicable		

A.4. Result area(s)

*Check the applicable GCF result area(s) that the overall proposed project/programme targets below. For each checked result area(s), indicate the estimated percentage of **GCF and Co-financers' contribution** devoted to it. The total of the percentages when summed should be 100% for GCF and Co-financers' contribution respectively.*

	GCF contribution	**Co-financers' contribution**
Mitigation total	2.6%	16.6%
☒ Energy generation and access	2.6%	16.6 %
☐ Low-emission transport	Enter number %	Enter number %
☐ Buildings, cities, industries and appliances	Enter number %	Enter number %
☐ Forestry and land use	Enter number %	Enter number %
Adaptation total	97.40%	83.40%
☒ Most vulnerable people and communities	13.93%	48.28%
☒ Health and well-being, and food and water security	4.47%	16.28%
☒ Infrastructure and built environment	79.00 %	18.84 %
☐ Ecosystems and ecosystem services	Enter number %	Enter number %

A.5. Expected mitigation outcome *(Core indicator 1: GHG emissions reduced, avoided or removed / sequestered)*	-1.127 tonnes of CO_2 equivalent (tCO_{2eq}) average per year; -6.761 tCO_{2eq} after 6 years of implementation; -22.536 tCO_{2eq} over twenty years	**A.6. Expected adaptation outcome** *(Core indicator 2: direct and indirect beneficiaries reached)*	1,958,134 (women 971,909– 50%) (4.5% of the total population). Details available in Annex 23	
			1,044,800 direct (women 517,994 50%)	913,334 indirect (women 453,915 50%)
			2.6%	*2.3%*
A.7. Total financing (GCF + co-finance[1])	29.25 million + 9.70 million USD (38.95 million USD)	**A.9. Project size**	Small (Upto USD 50 million)	
A.8. Total GCF funding requested	29.25 million USD			

A.10. Financial instrument(s) requested for the GCF funding

Mark all that apply and provide total amounts. The sum of all total amounts should be consistent with A.8.

☒ Grant 29,252,000 UfSD
☐ Loan Enter number
☐ Guarantee Enter number
☐ Equity Enter number
☐ Results-based payment Enter number

A.11. Implementation period	*6 Years*	**A.12. Total lifespan**	*20 Years (including implementation period)*
A.13. Expected date of AE internal approval	*6/10/2022*	**A.14. ESS category**	*Refer to the AE's safeguard policy and GCF ESS Standards to assess your FP category.* B
A.15. Has this FP been submitted as a CN before?	Yes ☒ No ☐	**A.16. Has Readiness or PPF support been used to prepare this FP?**	Yes ☐ No ☒
A.17. Is this FP included in the entity work programme?	Yes ☒ No ☐	**A.18. Is this FP included in the country programme?**	Yes ☒ No ☐

A.19. Complementarity and coherence

Does the project/programme complement other climate finance funding (e.g. GEF, AF, CIF, etc.)? If yes, please elaborate in section B.1.

Yes ☒ No ☐

A.20. Executing Entity information	The Government of Iraq, acting through the Ministry of Water Resources and the Ministry of Environment will be Executing Entities to implement their own in-kind co-financing. Food and Agriculture Organization of the United Nations, through its representation in Iraq will be the Executing Entity of the GCF Funds.

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

Context and climate vulnerability**.** Iraq is one of the most vulnerable countries to climate change in the Middle East. The analysis of local meteorological data (Annex 16-A) indicates that average temperatures have increased by 0.37°C per decade since 1980 and are projected to further rise between +0.3°C and +0.6°C in the 2020-2060 period (RCP 4.5 and RCP 8.5 scenario). Iraq is already experiencing climate change impacts which exacerbate soil salinity, loss of biodiversity, decreased yields and desertification. The country is facing acute water scarcity due to river flow fluctuations brought about by increasing use of water in the upper riparian countries compounded by variable rainfall patterns and increased temperatures due to climate change. In preparation for the project, the deviation in annually accumulated precipitation was evaluated. Results confirm a significant increase in rainfall variability (Annex 16-A, p. 53). Combined with weak management of water resources, these phenomena lead to decreased groundwater levels and inefficiencies in the allocation and use of the scare water resources in the country. Climate Change trends are expected to worsen in the next 20 years, in particular in the project's three-targeted governorates – Karbala, Muthanna and Najaf, with adverse effects on water and agriculture. Water scarcity and suboptimal water quality significantly reduce crop yields and affect agri-food systems, threatening food security, social stability and the GDP [WB, 2022].

Key Challenges. Significant reduction in the annual amount of Climatic Water Availability (CWA) at a rate between −1 and −13 mm/year was observed at 0.05 level of significance in most of Iraq, including in the three-targeted governorates [Salman et al., 2020]. The Euphrates and Tigris River basins are faced with increasing demographic pressures, upstream hydro-infrastructure developments to cope with climate change, water-quality concerns and a real threat of growing conflicts over water use. The inflow of the Euphrates and Tigris have both declined significantly, also because of climate change impacts. In particular, the average yearly inflow of the Euphrates declined from 30.26 BCM (1933-1972) to about 16.90 BCM (average of 1990-2012) representing a decrease of 44%, while the inflow of the Tigris declined from 49.22 BCM (1933-1998) to 32.64 BCM (1999-2012) representing a decrease of 34%, [Ahmed A., 2019]. Due to climate change, precipitations in the water basin are projected to decrease significantly, exacerbating further the reduction in surface water availability. Together with rising temperatures, rising potential evapotranspiration and variable rainfall patterns at local level, the productivity of farming in the target areas will be reduced. Agriculture is identified as one of the most vulnerable sectors to these changes due to its reliance on the rivers for irrigation. While agriculture contributes only 5.9% to GDP, its value in absolute terms is significant as is its contribution to employment (18% [WB, 2023]). The problems in the sector are compounded by the fact that most of the agriculture production in the country is undertaken by smallholders with limited capacity to adapt to climate risks. This will further decrease land productivity, reduce yields, food security and incomes, threatening the livelihoods of most of the rural population, already the poorest compart of Iraq's population (42% [SIDA, 2022]) and increase migration to cities.

Proposed Interventions: The project goal is to enhance climate resilience of vulnerable agriculture households in Iraq's rural communities in Najaf, Karbala and Muthanna (Annex 16). The project is designed to have three components. **Component 1: Strengthening resilience against climate induced water scarcity** to address water and energy scarcity to ensure increased water supply, reduce water losses and increase water use efficiency; **Component 2: Climate resilient agriculture production** will address the adaptation deficit of farming communities via extension programmes, knowledge transfer processes, empowerment of Water User Associations (WUAs)[1], and through e-extension systems and Information Communication Technology for Climate Change (ICT4CC). **Component 3: Scaling-up climate adaptation through policy formulation and planning** will address the strategic and legal framework for water management and adoption of climate resilient technologies. Total project costs are estimated at USD 38.1 million. The total comprises a GCF grant of USD 28,4 million (75% of total project cost) FAO grant of USD 6.82 and FAO in-kind USD 0.08 million, and Government of Iraq contribution of USD 2.8 million (7 %).

Impact Potential: The project goal is to enhance climate resilience of vulnerable agriculture households. It is expected that the activities will contribute to increased climate resilient sustainable development in Iraq through improving the water distribution systems, stabilizing and increasing water availability at the farm level; increasing crop water productivity; transforming the existing irrigation network into more water efficient systems, strengthening of water management institutions and the water distribution regime; reducing the adaptation deficit of farming communities via specific and tailored training and capacity development. In a business-as-usual scenario, climate change will further reduce food security in Iraq and increase the overall social and economic instability fastening rural to urban migration, increasing unemployment and increasing conflicts of water resources. As a response, the project is expected to reach 1,958,134 people of which 1,044,800 will be direct beneficiaries and 913,334 will be reached indirectly thereby reaching approximately 5% of the total population (2.6% directly and 2.3% indirectly) (Annex 23, Tables 1,2 and 3). The number of women expected to benefit is 971,909 (517,994directly and 453,915 indirectly). Results of this cross-cutting project,

1 Refer to the Policy of Co-financing of the GCF.

using the Ex-Act tool, report an annual emission avoidance through the infrastructure investments in Component 1 and from the mitigation co-benefits of the CRA capacity development activities of Component 2 of about 67,208 tonnes of CO_2 equivalent per year (after Y6 – 403,246 tonnes of CO_2 eq) or 1,344,154 tonnes of CO_2eq avoided over 20 years (Annex 22). In this regard the project considers GHG reductions through the implementation of Component 1 in the core indicator 1 (-22,536 tCO_{2eq} over 20 years), while it accounts the impact of the capacity development activities for Climate Resilient Agriculture of Component 2 as mitigation co-benefits (-1,321,618 tCO_{2eq} over 20 years).

The overall Economic Rate of Return of the project is 16.06% and its NPV is USD 48.6 million under the base case scenario. The Economic and Financial analysis [Annex 3 and Annex 25] of the project shows that it is financially and economically viable. At the farm level, the project will increase crop yields of corn (5%), barley (6%), wheat (20%) and rice (23%) and agricultural margins, that expect to increase at around IQD 111,721 on average in farm models. These results are due to the significant increase in water productivity from 27% to 45% obtained by the adoption of climate resilient agricultural practices. The main sources of benefits also include the increase in crop intensity; and energy savings from the rehabilitation and upgrading of the targeted irrigation schemes that will support farmers to better deal with climate change induced water scarcity. The NPV is resilient to risks of increased costs, reduced profits, climate change shocks affecting benefits, and delay in implementation and realization of benefits of one and two years.

Paradigm Shift: There are several areas in which the project is expected to stimulate, facilitate and support a paradigm shift in the country. These include: (i) transformation of the agriculture food sector through more efficient use of water by conversion of the open-air canals to piped systems; (ii) increasing energy security by introducing solar powered panels on irrigation channels; (iii) transforming agriculture production practices and climate resilient technologies; (iv) modernizing the system of water regulation and use; (v) and participation of women as key agents of change in the farming sector. The project will mobilize technical assistance and female agricultural outreach workers or extension agents to impart knowledge and establish a cadre of Climate Wise Women (CWW). This network of CWW will help to increase adaptive capacity of women farmers in the face of climate risks and empower them through enhancing their leadership skills and ability to adapt to climate change. Shifting the paradigm from women as victims to women as powerful agents of change, has shown to be transformative. The current project is expected to have a significant impact in changing perceptions and stereotypes regarding women and their role in communities.

Furthermore, the activities related to solar energy will support the creation of new markets and business opportunities. The elaboration of the roadmap for rural solar electrification and the installation of solar panels above canals is in fact expected to encourage public and private investment in renewable energy. The uptake of climate-adaptive agricultural technology is foreseen to create new business activities and incentivize private sector investment as well. Finally, the project will design a new climate resilient policy to promote efficient use of water in agriculture at the national level. In addition, the project is expected to assist the Government in preparing a road map for solar rural electrification. This is expected to enhance awareness regarding the use of renewable energy and create a demand for this technology. Additionally, the project is aligned with the GCF Strategic Program 2024-2027, particularly Target 4, 5, 6, 7, and 10 (Table 1).

Table 1 Main contribution of the Project to the GCF Updated Strategic Program 2024-2027

USP target	USP 2024-27 targets	Main projects contribution
4. Food	190 to 280 million beneficiaries adopting low-emission climate-resilient agricultural and fisheries practices, securing livelihoods while reconfiguring food systems.	22,536 tCO_{2eq} expected mitigation outcome and -1,321,618 tCO_{2eq} as expected mitigation co-benefit 1,958,134 Individuals with increased resilience (women 971,909)
5. Ecosystems	120 to 190 million hectares of terrestrial and marine areas conserved, restored or brought under sustainable management.	121,965 hectares of farming area will be brought under climate-resilient management practices
6. Infrastructure	45 to 60 developing countries supported by GCF to develop or secure low-emission climate resilient infrastructure, through systemic and/or country-driven resilience planning, funding and/or de-risking of investments, including those that draw on nature-based solutions or ecosystem-based approaches.	68 km of irrigation canals will be rehabilitated in a climate resilient manner
7. Clean Energy	20 to 30 developing countries supported to expand access to sustainable, affordable, resilient, reliable renewable energy, particularly for hardest to reach, and/or to increase renewable energy sources in the energy mix.	The installation of solar systems on water canals will improve the energy and water security of at least 446 Households. Target governorates will benefit from enhanced rural planning related to solar energy, increasing energy security of the beneficiaries and providing possibilities for rural economic development and income opportunities in particular for the younger generation.
10. Innovative climate solutions, business models and technologies	900 to 1500 local private sector early-stage ventures and MSMEs provided with broad-based seed and early-stage capital for innovative climate solutions, business models and technologies, with a focus on adaptation, energy access and transport sectors, and removing barriers for home-grown innovation	Solutions and technologies transferred to technical institutes and vocational school, over 530 professionals trained. Furthermore, the development of special training modules for the private sector, SMEs and startups will be considered. The business development capacity of 400 extensionists and 10,000 farmers will be enhanced. Private sector involved in the development of a roadmap for solar rural electrification.

B. PROJECT/PROGRAMME INFORMATION

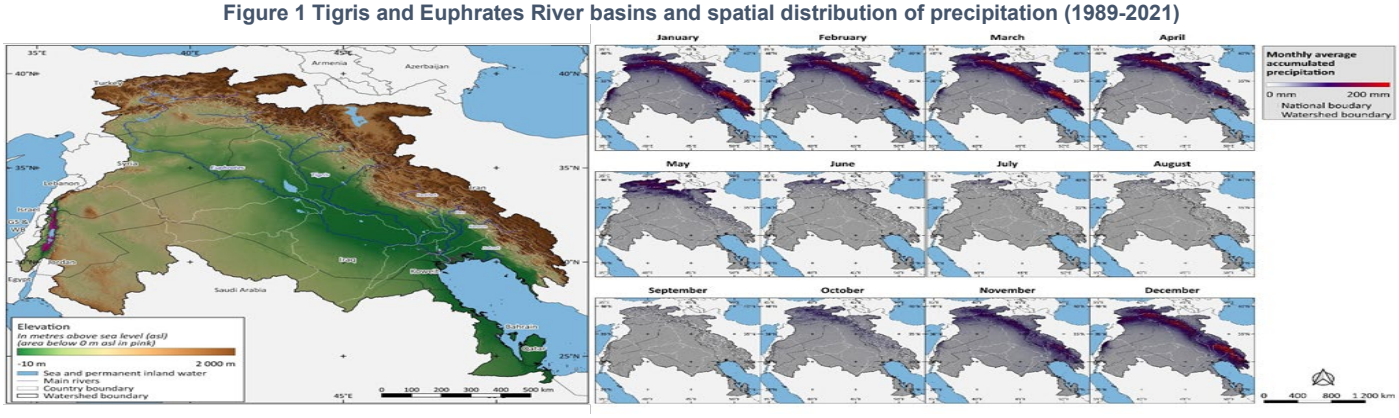
B.1. Climate context (max. 1000 words, approximately 2 pages)

1. **The development challenges** encountered in Southern Iraq are closely linked to the **Water Energy Food (WEF) NEXUS**, which underscores the relationship between climate induced water scarcity, energy deficits and food security concerns. These interconnected issues are primarily influenced by the following factors: (i) The country grapples with **water scarcity problems** exacerbated by increasing temperatures, reduced surface water and by outdated irrigation infrastructure and practices that contribute to preventing farming communities to adapt. (ii) The sectors **reliance on energy for irrigation purposes** faces obstacles due to unstable and carbon intense power supply in rural areas. Despite the prominent potential for solar energy in southern regions the utilization of low carbon sources remains largely underutilized. (iii) The complex interplay between climate induced water scarcity, energy deficits and climate change adaptation deficit of farming communities directly impact **food production and security**. The heavy reliance on imported food complicates matters, making the region vulnerable to market fluctuations and disruptions in the supply chain. The challenges related to managing natural resources in Southern Iraq highlight the need for implementing climate change adaption solutions addressing the WEF NEXUS. Addressing these issues can support development through climate change adaptation and mitigation while ultimately improving the environment and the quality of life, of communities.

2. **Context and climate vulnerability.** Iraq is one of the most vulnerable countries in the Middle East to climate change, because of its hydrological limitations, downstream access to water, and geographic position.[2] The country is located in the plains within two major rivers (Euphrates and Tigris) and limited arable land (21.4%). Currently it ranks 115th out of 182 countries on the ND-Gain index indicating urgency for climate adaptation actions and a need for investment to reduce the adaptation deficit of the population.[3] The climate is mostly arid with mild to cool winters and dry, hot, cloudless summers. Summer temperatures average above 36°C in the hottest month (July) for most of the country and frequently exceed 48°C (Annex 16-A, p. 38). Winter temperatures are mild with average temperatures in the coldest month (January) of around 11 °C. Annual rainfall ranges between 200 and 300 mm on average, but in the desert regions it amounts to between 50 to 200 mm[4]. Average temperatures have increased between +0.22°C and +0.56°C per decade in the target governorates and by +0.37°C per decade on a national level since 1980. The trends will be exacerbated in the future (Annex 16-A), in particular in Karbala, Muthanna and Najaf which are the three targeted Governorates, with adverse effects on water availability leading to reduced farming capacity.

3. **Climate Change Impact on watershed level[5].** The river basins of the Tigris and Euphrates covers numerous countries (see Figure 1 and Figure 2). The evaluations carried out with the ERA5 model[6] for historical data and the NASA Earth Exchange NEX[7] for projected future conditions brought the following results: between 1980 – 2020 maximum and average temperatures increased by 0.5°C/dec and 0.6°C/dec respectively, while no significant historical trend could be detected related to minimum temperature and accumulated annual precipitation (rainfall). Reportedly, climate change has mainly led to a decrease in snow precipitation in the source areas of the two rivers within the riparian countries [Şensoy et Al., 2023; Şengül, 2022; FAO, 2011]. Projected minimum, maximum and average temperatures (2020 – 2060) show significant increases in both RCP 4.5 and RCP 8.5 scenarios and range from +0.26°C to 0.38°C (MIN), +0.45°C to 0.74°C (MAX) and +0.34°C to 0.6°C (AVG) per decade respectively. Precipitation is expected to decrease in the same period by -5,05 mm/dec in RCP 4.5 and by -5.83 mm/dec in RCP 8.5. Furthermore, Figure 2 shows that most of the precipitation of the watershed occurs on the mountain range from November until April confirming the need to increase the efficiency of water management practices and techniques in view of an increasingly reduced water flow. In particular, in the target areas, this action becomes even more urgent since irrigation practices are dependent on the rivers.

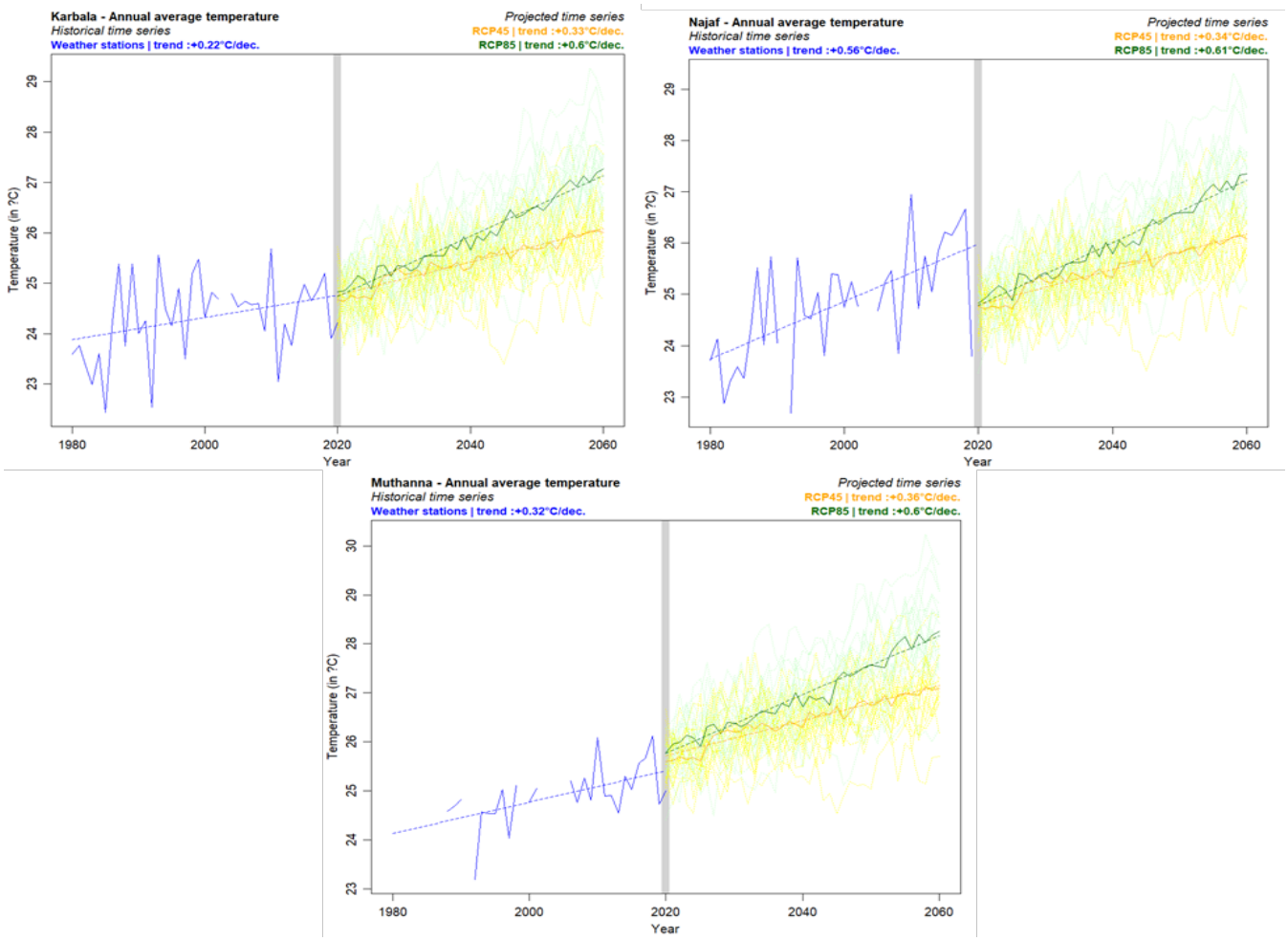
Figure 1 Tigris and Euphrates River basins and spatial distribution of precipitation (1989-2021)



4. **National and local historical climate trends**. Analysis of historical data indicates that the climate has already changed and that observed trends will further worsen. Iraq's Initial National Communication to the UNFCCC [INC, 2016] used data from eight meteorological stations[8] to analyze recorded rainfall and temperature trends between 1941 and 2009. Regression coefficients[9] showed positive trends in temperatures and negative ones in precipitation.[10] In addition, the country is reportedly also facing increasingly erratic rainfall patterns [World Bank, 2021; GoI, 2018b]. Climate Change has been identified as one of the main drivers to water scarcity [UNAMI, 2022]. The FAO analysis (2021) of local meteorological data (Annex 16-A) confirms the annual

average temperature increases (1980-2020, Figure 2) and the increased rainfall variability. Changes in rainfall patterns have been observed to amplify water conflicts in the country [IPCC, 2022] and for the whole Middle Easter region rainfall deficit has been observed compared to the period 1950-2000 reducing cereal production below average [WMO, 2022]. Although climate change is negatively impacting agricultural activities throughout the country and in particular all of the Southern region, the project, in agreement with national counterparts and on the basis of the analysis of several vulnerability criteria (see Table 3) focused its interventions on the Governorates of Karbala, Muthanna and Najaf. Based on FAO's findings (2021), during the 1980-2020 period in the target areas, precipitation remains highly variable (between 17 mm/year and 185 mm/year) and the average temperatures have increased up to 0.56°C in Najaf per decade against a national average of +0.37°C per decade.

Figure 2 Annual average temperatures - Historical and projected trends in the targeted governorates



5. **Climate Change impacts.** The adverse impacts of climate change is leading to increased soil salinity, loss of biodiversity, decreased agricultural yields and increased desertification [GoI, 2016]. This combination of factors, together with obsolete farming practices and mismanagement of water resources contributes to desertification[11] [WFP, 2019] and to a decrease in levels of groundwater, springs and aquifers [GoN,2018; ESCWA, et al 2017]. The aforementioned impacts have significant implications for the efficiency and sustainability of agricultural practices. During the preparation of the project, deviations of annually accumulated precipitation were evaluated. In target areas and on a national level there is a significant increase in rainfall variability[12] (Annex 16A- Figure 36) in the period between 1985 and 2020, with +5.06 mm/dec. and +4.52 mm/dec. respectively. Projections foresee a further increase in variability in Karbala, Najaf and on a national level in the period between 2020 and 2060 in an RCP 8.5 Scenario with +1.43 mm/dec., +0.29mm/dec and +1.78 mm/dec. respectively[13] (Annex 16A - Figure 41). Given the obsolete distribution of infrastructures on a national and local level, variability in rainfall negatively impacts water availability, and a portion of it is eventually lost to runoff and evaporation. In this regard the variability negatively impacts the situation of already decreasing surface water resources, which are essential for the irrigation in Southern Governorates. Climate variability is one of Iraq's main challenges, especially in terms of water supply. For instance, two years of severe drought between 2007 and 2009 were followed by several months of sudden heavy rainfalls and storms during which some parts of central and southern Iraq experienced rainfall amount about 200% of normal values. Finally, 2022 is the third consecutive year of drought which impacted the decision of the government for the agriculture winter plan.

6. **Future climate projections**[14] for Iraq show that the historical trends of warmer temperatures will continue in the future and that precipitation is likely to diminish. ESCWA, et al, (2017) reported that IPCC AR5 findings[15] identified an increase by +2-3°C

in 2050 (RCP 8.5 scenario) or +2°C by 2081-2100 compared to 1986-2005 period (RCP 4.5 scenario) [WB, 2020; ESCWA, 2017]. Based on the CORDEX MENA model, temperatures could increase by +2.25/2.75°C in winter and +2.75/3.25°C in summer in 2081-2100 (RCP 4.5 scenario), with peaks of +6/6.25°C in summer under the RCP 8.5 scenario [Lelieveld, et al, 2016]. Annual rainfall will decrease by -3.50mm (-60.17mm to -63.69mm) in 2040-2059 (RCP 8.5, Ensemble) [WB, 2020], and decrease by -10% end of century compared to the 1986-2005 period (RCP 8.5 scenario) [ESCWA, et al, 2017 based on the IPCC findings]. FAO analysis of local meteorological data of the target governorates indicates that annual average and maximum temperatures[16] and Potential Evapotranspiration (PET) will increase in the 2020-2060 period in all scenarios, while average annual precipitation is expected to decrease in the same period in RCP4.5 (Table 3).

7. **Central to the challenges in the agricultural sector is the increasing demand for water**. Agriculture is the main source of employment for 30% of the population living in rural areas and overall, for 23% of women. The majority of the income of the farmers (75%) is from crop cultivation with the remaining sources being livestock or mixed crop and livestock enterprises. Agricultural practices are highly dependent on irrigation: 70% of farmers depend on irrigation for wheat production particularly in the South region [FAO, 2021]. Significant reduction in the annual amount of Climatic Water Availability (CWA)[17] at a rate between −1 and −13 mm/year was observed at 0.05 level of significance, indicating an increased need for irrigation for crop production [Salman et al., 2020]. The Euphrates and Tigris River basins will gradually face more challenges related to reduced precipitation (snow and rainfall) and demographic pressures (71.3 million people in 2050 [Abdulhadi, 2017]). There are both climatic and non-climatic factors which impact the availability of water (see Table 7 and 8 in Annex 2). The average yearly inflow of the Euphrates reportedly declined from 30.26 BCM (1933-1972) to about 16.90 BCM (average of 1990-2012) (decrease of 44%), while the inflow of the Tigris declined from 49.22 BCM (1933-1998) to 32.64 BCM (1999-2012) due to over use by the upper riparian countries [Ahmed A., 2019]. Climate change is among the main drivers contributing to the decline in water discharge in the Iraqi rivers. This is supported by a vast body of recent scientific literature (Bozkurt and Sen 2013; Al-Salihi, Kamel, and Abdulhameed 2022; Adamo, Al-Ansari, and Sissakian, n.d.; Nahlah Abbas, Saleh A Wasimi, and Nadhir Al-Ansari 2016; Özdoğan 2011).[18] Surface water is projected to decrease by 17.64 BCM (billion cubic meters) (-24.5%) until 2035 [Iraq Energy Institute, 2018] (Paragraph 119 to par. 129 of Annex 2 details current and projected water use). In order to avoid a negative water balance in the future it is therefore necessary to implement major reforms in all sectors, in particular to reduce consumption in the agricultural sector (see Table 2). This is founded on the fact that by reviewing cropping plans in the agro-climatic zones, reducing conveyance loss and reducing irrigation demand by increasing on-farm irrigation efficiency, necessary agricultural water amount could decrease to 32 BCM by 2035 (a reduction of 30 percent of that of 2015)[19].

8. **Ground Water:** The feasibility study (Annex 2, par. 130 - 132) gives in-depth information about the current and future groundwater use in the country. In general, groundwater does not satisfy the standards of drinking water except in northern Iraq and the west desert[20]. Good quality groundwater exists in the foothills of the mountains in the northeast of the country and in the area along the right bank of the Euphrates (see Appendixes 4 to 7 to Annex 2). Concerning irrigation, groundwater in southern governorates often has an elevated salt content and is therefore not suitable to be used- (Appendix 6 and 7 of Annex 2). In the area covered by the 3 governorates the GW quality is mainly within the limited to seldom use in Karbala and Najaf while in Muthanna it's between good to limited. The safe yield of these aquifers is estimated at about 1.2 BCM annually, about 2 percent of the nation's annual water budget[21]. Additional information about groundwater salinity and wells can be found in Appendixes 6 (p.254) and 9 (p. 257) respectively.

Table 2 Iraq's water balance with the implementation of the Strategy on Water and Land Resources (SWLRI)[22]

	2015	2020	2025	2030	2035
Total Available Water (FW + GW + DW)	**81.146**	**75.427**	**71.140**	**67.894**	**64.281**
Available Surface Water	72.122	65.761	61.080	57.984	54.482
Sustainable Groundwater Withdrawals	5.243	5.243	5.243	5.243	5.243
Drainage Water	3.781	4.423	4.817	4.667	4.556
Total Water Consumption (FW + GW + DW)	**79.674**	**73.146**	**68.068**	**64.857**	**61.320**
Total Freshwater Consumption	**72.122**	**65.760**	**61.079**	**57.983**	**54.482**
Municipal & Industrial	5.769	6.167	6.663	7.152	7.504
Agriculture(*)	46.09	40.089	36.294	33.378	32.187
Fish Farms and Livestock	0.329	0.329	0.329	0.329	0.329
Total Marshlands Consumption	5.388	7.037	6.554	6.395	5.825
Flow to the Gulf via Shatt Al Arab River	3.934	4.691	4.514	4.402	3.391
Evaporation from Rivers	0.959	0.959	0.959	0.959	0.959
Evaporation from Reservoirs	9.653	6.488	5.766	5.368	4.287
Total Groundwater Consumption	**3.771**	**2.963**	**2.172**	**2.206**	**2.282**
Municipal & Industrial	0.272	0.304	0.337	0.369	0.4
Agriculture	3.499	2.659	1.835	1.837	1.882
Total Drainage Water Consumption	**3.781**	**4.423**	**4.817**	**4.668**	**4.556**
Oil Sector	0.162	0.211	0.338	0.521	0.55
Hammar Marsh (via MOD) + Shatt Al Arab (via ETD)	3.306	3.899	4.166	3.834	3.693
Green Belts	0.313	0.313	0.313	0.313	0.313
Water Balance	**1.472**	**2.281**	**3.072**	**3.037**	**2.961**

9. Farming practices, particularly the flood irrigation methods also contribute to wastage and inefficiency in the use of water. Farmers lack proper understanding of crop water requirements and urgently need to build their adaptive capacity in view of growing climate risks and water scarcity. Simulations carried out with the CROPWAT[23] model, using local meteorological data as a baseline and projected climatic data from the NASA Earth Exchange - Global Daily Downscaled Climate Projections (NEX – GDDP) dataset, estimated that in the RCP8.5 scenario, the reference evaporation in the project-selected areas would increase by 2.5% by 2040, compared to the baseline year scenario (2019). In practice, this will mean an increase of 45 mm/year that will undoubtedly increase the demand for water resources for crop irrigation.

10. Drought conditions in Iraq have been exacerbated by the threat of climate change, which has contributed to erratic precipitation and increasing temperatures throughout the country.[24] The frequency of major droughts (occupying > 50% of the country) and above-normal precipitation conditions prevailed in > 50% of Iraq have also been studied at length.[25] In the southern regions for example, 2/3 of wheat farmers reported that fluctuation of the temperatures, soil salinization and drought are the most impactful climate change effects on production [FAO, 2021]. A study on Iraq utilized standardized precipitation index (SPI) to determine drought depending on monthly rainfall data that were collected from 24 stations during the period 1950-2016. Short term drought represents agricultural drought taken for six months (SPI 6) and long-term drought represents hydrological drought taken for twelve months (SPI 12). The results showed that the country was exposed to varied drought especially in the last decades (1997- 2016) for both long and short terms. To represent the results of SPI for April and October of 2015, the Geographic information system (GIS) was used with the aid of Inverse distance weighted (IDW). These months suffered from varied drought levels in different regions of Iraq ranging from mild to extreme drought.[26] FAO analysis of local meteorological data confirms an increase in exposure in long term hydrological drought for 24 months on a national level (SPI 24, Annex 16A, Figure 46).

11. Iraq is in the midst of a water scarcity crisis stemming from record low levels of rainfall, poor water resource management, and reductions in water flow into the Tigris and Euphrates rivers from upstream countries. Detailed information about the water demand and supply under different scenarios and with projections until 2035 can be found in par. 133-149 of the Annex 2 in the chapter “water balance”. Climate change exacerbates the decline in the inflow of water, in combination with over exploitation, because of increased temperatures and precipitation variabilities across the watersheds. Climate change will keep affecting water resources situation in Iraq negatively and will lead to severe variations in incoming water from Tigris and Euphrates Rivers, causing floods or drought. All water storage is likely to suffer increased evaporation due to higher temperatures. Higher temperatures will also increase crop water requirements, leading to increased agricultural water demands. Further challenges related to climate change are in particular the increase in temperature and PET which contribute to an increase in demand in irrigation water needs, while the supply is significantly decreasing.[27]

12. Target areas were identified based on a host of factors that included vulnerability to climate and impact of climate change on food security. The Governorates with high potential for food production and low socio-economic ranking which have limited capacity for resilience were given priority in the selection (See Table 3). The selection of the Governorates also prioritized those areas where there had been limited donor engagement. Based on this analysis the NDA, in consultation with the Local Government authorities selected Najaf, Karbala and Muthanna. While there had been some earlier projects in Muthanna, this Governorate was included because it is the poorest area in the country with a high vulnerability and considerable food deprivation with a strong need to enhance food security [UN, 2013].

13. The three selected governorates are among the most vulnerable ones to climate change, due to their location in the tropical desert climate zone in the south and their exposure to future climate impacts. The total population of the three Governorates is

3,596,941 with an alarmingly high share of households vulnerable to food insecurity: 65 percent in Karbala, 67 percent in Muthanna, and 87 percent in Najaf, compared to a national average of 53 percent. A quarter of the population lives below the national poverty line (24%) and Muthanna is the poorest governorate in the country. In fact, many farmers in the southern and western Iraq not only lack adequate long-term education but are also at increasing risk of losing their food security and livelihoods due to environmental degradation. This vulnerability risks becoming even more acute following the COVID-19 crisis. [Sida, 2020]). The target areas have the smallest proportion of arable land [WFP, 2019], with the highest drought prone area and limited agriculture yields. About 35% of the farms are small-scale (2.5 ha – 7.5 ha) while medium-sized farms (7.6 ha – 12.5 ha) make up 34% (ITC, 2021). Nevertheless, the area is important for food production as Najaf produces around 44% of the total rice production[28] and about 10% of the total wheat, barley, potato and corn.[29] The project areas were banned from planting rice and corn in 2018 due to extreme water scarcity and drought [Indhar, 2018; MEA, 2018] and now again in 2022. A large part of the area is now abandoned wasteland and no fresh water is available for reclamation or cropping. Soil salinity and water scarcity are the main causes for destabilizing the farming communities. On a national level, 60 percent of the cultivated land is negatively affected by salinity and in the target areas, this ratio is estimated to be significantly higher. Climate change vulnerability of farming communities in the identified governorates is further increased by non-climatic drivers such as price volatility, restricted access to financing sources, obsolete cultivation and harvesting machinery, limited extension services, inadequate harvesting and post-harvesting practices, poor access to energy, and outdated irrigation systems (open canals and flood irrigation practices) that could lead to higher dependency on imports to secure adequate food supplies.[30]

Table 3: Criteria for Target Governorate Selection

Governorate	Climate change Historical trends (1980-2020) Projected trends (2020-2060) under RCP 4.5 and 8.5 scenarios all data per decade[31]	Socio - economic criteria[32]	Vulnerability of Agriculture	Donor Intervention
National	**MEAN T °C:** Historical: +0.37°C Projected: RCP4.5:+0.33°C; RCP8.5:+0.60°C **MIN T °C**: Historical: -0.38°C Projected: RCP4.5:+0.23°C; RCP8.5:+0.32°C **MAX T °C**: Historical: +0.42°C Projected: RCP4.5:+0.44°C; RCP8.5:+0.74°C **Annually accumulated precipitations** : Historical: +1.59 mm Projected:RCP4.5:-4.39 mm;RCP8.5:-3.10 mm	53% of HH are vulnerable to food insecurity Proportion of people who are multidimensionally poor: 0.133 The Youth Development Index (YDI) on the national level: 0.641	Agriculture is highly vulnerable, as a result of the increasing temperatures, changing precipitation patterns, and high evapotranspiration. These climatic changes will increase heat stress on crops, reduce soil moisture, and increase water consumption by crops. Increasingly variable and unpredictable precipitation will increase crop failure risk and increase the dependence of crop production on irrigation water use.	Most of the agricultural interventions financed by donors in the Southern region are being implemented in governorates Muthanna, Qadisiya, Thi-Qar and Basra.
Najaf	**MEAN T °C:** Historical: +0.56°C Projected: RCP4.5: +0.34°C; RCP8.5:+0.61°C **MIN T °C:** Historical: -0.41°C Projected: RCP4.5: +0.22°C; RCP8.5:+0.30°C **MAX T °C:** Historical: -0.72°C Projected: RCP4.5:+0.43°C; RCP8.5: +0.73°C **Annually accumulated precipitations :** Historical: -1.03mm Project.: RCP4.5:-1.86 mm; RCP8.5:-1.22mm **Potential Evapotranspiration (PET)**: Project.:RCP4.5:+19.79 mm;RCP8.5:+35.02 mm	87% of HH vulnerable to food insecurity Proportion of people who are multidimensionally poor: 0.140 YDI: among the lowest of all Governorates 0.545	The target areas have the smallest proportion of arable land, with the highest drought prone area and limited agriculture yields. Flood irrigation is still prevalent leading to considerable inefficiencies in water use (only 30 to 35% irrigation efficiency) in the three governorates of Najaf, Karbala and Muthanna. The Euphrates River and its branches are the main source of water for irrigated agriculture. Rice and corn farmers are forced to assess alternate options as the state has started to ban the production of rice and corn in years when there is drought or insufficient water in the irrigation system Najaf represents the main area for rice cultivation in Iraq during the summer season. The summer season is the main agricultural season where rice constitutes more than 90 percent of cropped area. Given	Most of the agricultural interventions financed by donors in the Southern region are being implemented in governorates Muthanna, Qadisiya, Thi-Qar and Basra. Given that Muthanna is the poorest governorate in the country (52%), it was included because it is the poorest area in the country with a high vulnerability and
Karbala	**MEAN T °C:** Historical: +0.22°C Projected: RCP4.5:+0.33°C; RCP8.5:+0.60°C **MIN T °C:** Historical: -0.64°C Projected: RCP4.5:+0.21°C; RCP8.5: +0.29°C **MAX T °C:** Historical: +0.29°C Projected: RCP4.5:+0.42°C; RCP8.5: +0.76°C **Annually accumulated precipitations :** Historical: +1.48mm Project.: RCP4.5:-2.64 mm; RCP8.5:-1.21mm	65% of HH vulnerable to food insecurity Proportion of people who are multidimensionally poor: 0.129 YDI: 0.628 (less than national average)		

	PET: Project.:RCP4.5:+19.22mm;RCP8.5:+33.88mm		the importance of rice as a main food staple the climate resilience of the governorate is therefore of national interest Agriculture is highly vulnerable, as a result of the increasing temperatures, changing precipitation patterns, and high evapotranspiration. These climatic changes will increase heat stress on crops, reduce soil moisture, and increase water consumption by crops. Increasingly variable and unpredictable precipitation will increase crop failure risk and increase the dependence of crop production on irrigation water use.	considerable food deprivation with a strong need to enhance food security
Muthanna	**MEAN T °C:** Historical: +0.32°C Projected: RCP4.5:+0.36°C; RCP8.5:+0.60°C **MIN T °C:** Historical: +4.08°C Projected: RCP4.5:+0.26°C; RCP8.5:+0.37°C **MAX T °C:** Historical: +1.37°C Projected: RCP4.5:+0.45°C; RCP8.5: +0.73°C **Annually accumulated precipitations :** Historical: not enough data Project.: RCP4.5:-1.64mm; RCP8.5:-0.78mm **PET:** Project.: RCP4.5:+20.85 mm; RCP8.5:+36.22mm	67% of HH vulnerable to food insecurity Proportion of people who are multidimensionally poor: 0.192 YDI: 0.554 (less than national average)		

14. **Project alignment with Iraq's national mitigation and adaptation priorities**. Iraq has set forth several adaptation and mitigation actions to meet its commitments for sustainable development. GHG emissions in 2018 were estimated to be 216,19 Mt CO_2eq, representing an increase of more than 200% compared to 1990 [Climate Watch Data, 2021]. Of these emissions, the energy sector accounted for 186,56Mt CO_2Eq or 86%, while agriculture represented 7,39Mt CO_2Eq (3% of the total GHG emissions). The NDC set the targets to reduce greenhouse gas (GHG) by 17% (15% conditional and 2% unconditional) compared to the BAU. SRVALI aims to carry out activities leading to mitigation of GHG emissions corresponding to 67,317 tCO_2[33] per year from improved agricultural practices and the installation of Photovoltaic systems on water canals. The project will help the farming communities adapt to climate change and contribute to improved water management and agricultural practices[34] and is aligned to the National Development Plan 2018-2022, Iraq Vision 2030, Land Degradation Neutrality Target Setting National Report – 2017, the Strategic Plan of the Ministry of Agriculture 2015-2025, Integrated Energy Strategy (2012), Strategy on Water and Land Resources (SWLRI) (2013), and Strategy for the reduction of poverty in Iraq (2018-2022). Additional information on priority and project component alignment is provided in Table 10 of Annex 2.

15. An overview of the synergies and complementarities between SRV-ALI and the WFP-GCF project "Promoting Climate Resilient Livelihoods of Food Insecure People in Southern Iraq" is presented in Table 89 in Annex 2.

Table 4: Lessons learned from and synergies with main past, ongoing and planned projects that have been integrated in SRV-ALI

Project	Scope	Lesson(s) learned and/ or synergies	Relevant Component – SRV-ALI	Contribution to design of SRVALI
JICA, Irrigation Sector Loan	Irrigation infrastructure	Rehabilitating and upgrading the existing irrigation systems contributes to increasing water use efficiency and agricultural production, creating medium-term and long-term job opportunities, and accelerating regional development.	1	Technical design
JICA, 2017. Sustainable Irrigation Water Management through Water Users Associations.	WUA	The establishment and enhancement of WUA significantly improves the efficient operation and maintenance of improved irrigation infrastructure.	1	Role of WUA and built on the experience.
Different international projects for the utilization of solar systems on water canals	Solar Energy	Solar systems on canals reduce water evaporation, land costs and can contribute to solar rural electrification.	1	Technical design & costing
IFAD/Adaptation Fund. 2019. Building Resilience of the Agriculture Sector to Climate Change in Iraq	Agriculture and CSI	**Lessons learned:** i) WUA are necessary to ensure efficient operation of irrigation infrastructure; ii) Farmers need to be provided with the know-how and technology to carry out climate smart irrigation agriculture to ensure sustainable production; and iii) Governmental execution of Donor Funds in the current situation represents significant bottlenecks for project implementation. It is therefore advisable for FAO to assume direct executing responsibility with the monitoring of the government. **Synergies:** **i)** The project will ensure an exchange of experience and practical lessons learned during implementation in particular related to WUA, CSI, CSA and policy development. Furthermore, as agreed with IFAD, it will be analyzed whether meteorological and early warning information can be shared with the project. SRVALI on the other hand will be able to provide the AF project	all	Share experiences and capitalize on synergies through regular exchange

		with information on conveyance infrastructure investments (irrigation rehabilitation and solar systems) as well to provide all the training materials and knowledge produced. The IFAD/AF has not yet started full operations. In this regard, IFAD is exploring with FAO the possibility to implement the farmer training and on-farm investment support[35].		
WFP/GCF, 2019. Promoting Climate Resilient Livelihoods of Food Insecure People in Southern Iraq[36]	Agriculture	Capacity strengthening and investment for water use efficiency and climate adaptive agricultural practices lead to enhanced productivity and resilience of vulnerable households. ii) Synergies and complementarities are outlined in Table 89 of Annex 2.	2	Share experiences and capitalize on synergies through regular exchange
FAO, 2019 WaPOR - remote sensing for water productivity	Agriculture	Synergies: i) WaPOR will provide the GCF project with important remotes sensing data that can be useful for planning CSA on a local level; ii) At the same time, SRVALI is expected to provide useful applied data for ground truthing of remote sensing data; and iii) The initiatives will evaluate furthermore synergies and complementarities in capacity development activities of extensionists.	2	Share experiences and capitalize on synergies through regular exchange
Different initiatives promoting Climate Wise Women which has been implemented by WOCAN in several countries.	Climate Wise Women	Knowledge of local women, on the ground, is critical for fighting climate change and there has been considerable success with women-led community resilience groups	2	Gender Action Plan.
All major projects related to water infrastructure and management in Iraq	Water management	Institutional capacity is of critical importance, as well as bringing the best global practice to the country. From the earliest stage, it is important to emphasize community consultation with the widest range of stakeholders including local leaders and community groups to address local concerns and benefit from local experiences, building ownership.	3	Approach and technical design.
UNDP, 2018. Catalyzing the Use of Solar Photovoltaic Energy	Solar Energy	Solar energy can increase energy security and economic development and the country is open to change in sectoral policy planning. SRV-ALI can complement the efforts by concentrating on promoting electrification of the rural areas.	3	Technical design & Policy aspects.

16. The project is expected to work in close collaboration with the WFP GCF project titled “Promoting Climate Resilient Livelihoods of Food Insecure People in Southern Iraq”, the IFAD financed project titled “Smallholder Agriculture Revitalization Project and the Building Resilience of the Agricultural Sector to Climate Change” and other partners that aim at addressing climate change and agriculture issues in the country. The current project will build on the lessons of the Irrigation Sector Loan project, GEF Energy Efficiency (UNDP project), National Adaptation Plan and UN Environment. The current project will demonstrate an innovative approach to installing solar panels on canals which the private sector is expected to scale up. The solar electricity generated will be used by pumps managed by the DOWR for delivering surface water to farmers’ fields. SRVALI is building on previous JICA experience of working closely with WUAs to build their sustainability through further strengthening and financial support. The SRVALI project is also aligned with the FAO’s Country Programme Framework (CPF) in Iraq that aims to promote and increase sustainable smallholder agricultural productivity for higher food security and nutrition. A major weakness of previous and some of the on-going projects is the marginal role that women have had in the initiatives. The current project recognizes that women are impacted by climate change and can be an important agent of change in the agriculture sector. It will thus identify and train a cadre of women agents of change at the community level to empower them to address climate risks. The main international organizations responsible for implementing similar projects were consulted during design to learn lessons and build synergies (Annex 2, p.55, p.112, p.130). An overview of the lessons learned that have been integrated in the project is given in Table 4.

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

17. Iraq’s agriculture faces constraints in terms of water resource availability which are expected to worsen over time. These constraints stem from the lack of agreement about water share with upper riparian states, regulatory policy that prescribes its internal use, physical scarcity and the lack of financial resources to meet capital improvement needs. On one hand, the scarcity of water is due to global climatic change and on the other, it is due to over-use by upper riparian countries that have been releasing much lower volumes downstream. Some of the issues are also related to mismanagement of water resources inside Iraq, such as water losses in the distribution networks, overuse of water by inefficient irrigation systems, deterioration of water quality from return flows from agricultural drainage and sewage, increased water salinity[37], etc. The project is designed to respond to these challenges and to optimize water use in agriculture by improving agricultural productivity and emphasizing irrigation system efficiency, as well

as working with public and private extension services to increase the adoption of advanced production technologies and practices[38]. Investing in policy and legal reforms, and strengthening water resources planning, management, and governance can result in supporting a paradigm shift in the infrastructure investments for both the water and energy sectors. Farmers in the project area rely on climate-sensitive livelihoods with limited scope for diversification. There is high dependence on crop varieties that are not stress-tolerant and lack of information and access to efficient irrigation technologies, both of which can severely undermine food security. Rice and corn farmers are forced to assess alternate options as the state has started to ban the production of rice and corn in years when there is drought or insufficient water in the irrigation system [NYP, 2018]. There is also limited farmer awareness about climate resilient technologies and practices and limited access to actionable climate information. Flood irrigation is still practiced leading to considerable inefficiencies in water use (30 to 35% irrigation efficiency throughout the country). The agriculture extension services for technology transfer, particularly for small producers, are weak and in need of new climate adaptive skills. Farmers do not have the knowledge and skills to address the adaptation deficit by themselves. As a general rule, CSI approaches recommend that CSI projects focus initially on improving the performance, productivity and profitability of existing irrigated crop production systems. This entry point is recommended because irrigation systems where farmers have adopted good irrigation practices tend to be more resilient to climate change than systems that, for one reason or another, are underperforming. There is also a significant risk that investment in CSI adaptation and/or mitigation will be ineffective if farmers are lacking in, for example, crop husbandry and water management know-how, or irrigation systems are not performing well because sources of water are, for example, being overexploited or systems are not well maintained.[39] FAO analysis of local meteorological data confirms an increase in exposure in long term hydrological drought for 24 months on a national level (SPI 24, Annex 16A, Figure 46).

18. There is need for a paradigm shift to increase the climate resilience of farming communities by: (i) increasing and stabilizing water availability at the farm gate; (ii) increasing water productivity; and (iii) reducing the adaptation deficit of farming communities via specific and tailored trainings and capacity development processes aimed at transferring more resilient practices and technologies into local production systems. There is limited understanding of impacts of climate change and lack of awareness of adaptation measures on different levels and limited integration of climate-related issues in key sectoral strategies and plans. Local level water user institutions such as the WUAs[40] have limited authority and capacity for water governance and no mechanisms in place to generate financial resources for long-term sustainability of operations and management. Women, who undertake a significant share of the agriculture tasks and are primarily responsible for post-harvest food storage, processing, and preparation in the household, lack awareness about how to adapt in the face of growing climate risks. Proceeding with the business-as-usual scenario is not an option for the future, as farmers in the project areas may not be able to ensure their livelihood through agriculture, and there are very limited options, if any, for the farmers to diversify their incomes by carrying out other activities outside of the sector. Concerted action, political resolve and increasing farmer capacity is urgently needed to address climate change related phenomena like water scarcity and associated risks that can exacerbate poverty, instability, conflict and lead to forced displacement [UNAMI, 2022].

19. The project goal is to enhance climate resilience of vulnerable agriculture households in Iraq's rural communities in Najaf, Karbala and Muthanna. The agriculture sector is still a major source of livelihood for the poor and food insecurity and is the largest source of rural employment. Strong and resilient development in the agriculture sector is critical for Iraq's vision of a more diversified and private sector led economy. Agriculture contributes around 5.9 percent to Iraq's GDP (2020)[41] [Trading Economics, 2021], around 20 to 30 percent to the employment in the country and is dominated by the private sector. It is an important source of employment for internally displaced persons (IDPs) and help close the gender gap [WB, 1999]. As described in the climate scenario (Annex 2 p. 28 - 44 and 16A), the sector is critically vulnerable to climate risks. The main source of water for agriculture is from the Euphrates and the Tigris Rivers. The total annual flow of these rivers greatly fluctuates from year to year due to changing meteorological conditions and growing demand.[42] The average annual flow of the Euphrates and Tigris is estimated to be about 30 BCM (which might fluctuate from 10 to 40 BCM) for the former and 21.2 BCM for the latter when entering Iraq. Tigris River tributaries in Iraq contribute 24.78 BCM of water and there are about 7.0 BCM of water brought by small wadies from Iran, which drains directly towards the marshes area (Nadhir Al-Ansari, 2016). Discharge rates in these rivers have already fallen to less than a third of normal capacity and are expected to drop further in coming years.

20. Available water resources are calculated as the total of the inflow from the upstream countries, water in the tributary watersheds within the boundary and return flows of agriculture, domestic and industrial uses. Available surface water in the next 20 years is estimated to decrease by 17.64 BCM, i.e. a decrease of 24.5%. Of which decrease in the water amount due to increase in water demand outside Iraq is 15.21 BCM (Mukhalad A. & al, 2019). Climate trends make the water supply unreliable, worsens conveyance losses and the rise in temperature increases the crop water demand. The changing climate trends have exacerbated problems of water scarcity with transboundary water conflicts worsening the situation, as each country tries to secure adequate water for its own growing needs[43]. The current irrigation system is not designed to convey water efficiently or equitably and the system of open canals in Iraq further aggravates the losses due to increasing temperatures and rising evaporation. One of the main expected outcomes from the project is an increased access to surface water from within their existing water allocations as the project would allow e farmers to have access to more surface water due to improved efficiency of the delivery system.

21. There are a host of barriers to climate change resilience in the country which include political, financial, technological, socio-economic, and institutional ones. While not all the barriers directly emerge from climate change, they are exacerbated by rising temperature, evapotranspiration, uncertain rain-fall patterns and increased water scarcity. Iraq's water demand is increasing leading to an estimated water deficit of 37% by 2030.[44] Scarcity of water and inefficient use, outdated irrigation infrastructure, energy shortages and lack of investment in low-emission technologies, the lack of skills of both farmers and extension officers, and

the inadequate policy and strategic framework related to water management are the main bottlenecks to climate change adaptation in Iraq and in particular to the farming communities of the central and southern plains. Lack of investment in modern irrigation and energy solutions leads to high rates of conveyance losses[45] and evapotranspiration on the open irrigation canals[46] and shortage of energy to deploy more efficient water use and low carbon emission practices. Furthermore, outdated practices and technologies prevent the adaptation of farmers and low carbon agriculture. Irrigation and drainage infrastructure is obsolete and running at only 30% efficiency (Annex 2, par. 190). The project aims to respond to the following main barriers to adaptation and mitigation: (i) Lack of public fiscal space for investments in innovation and climate proofing of agriculture; (ii) Shortage of energy and limited electrification of rural areas to enable efficient water use practices; (iii) High climate change adaptation deficit; (iv) Women's lack of awareness about resilient agriculture practices and unbalanced women's representation in decision-making; (v) Lack of supportive policy for efficient water regulation and use; and (vi) lack of appropriate incentives for more efficient low emissions energy supply and use. Further information about these barriers is included in Table 5 underneath.

22. Energy in particular is reported as one of the main obstacles to water use efficiency and sustainable management of water resources. The power supply is insufficient and unstable, especially for the main pumping stations. The peak period for irrigation water supply overlaps with the peak in general energy consumption, especially in summer. The main pumping stations use stand-by generators leading to high fuel costs or are connected to the grid with unreliable power supply. Without significant investments in infrastructure, the energy situation is expected to worsen, given that electricity consumption is projected to double to 150 terawatt hours (TWh) by 2030 from 75 TWh in 2018.[47] Many developers have raised concern in the past of slow and bureaucratic processes in obtaining land permission, financing, and access to transmission infrastructure. Currently, Iraq does not have a law that allows the private sector to export and sell electricity generated from renewable sources to the national grid. However, in 2019 a draft law for Renewable Energy was submitted to the Ministerial Energy Council and is still pending approval. The law aims to encourage the public and private sector to participate in developing renewable energy. Foreign and local investors expect that the new law will facilitate investment with clear mandate to finance, build and operate renewable energy projects.

Table 5: Main Barriers considered for the project

Main barriers	Underlying Factors	Key stakeholders	Strategies proposed by the project
(i) Lack of public fiscal space for investments in innovation and climate proofing especially in the agriculture sector.	Currently the level of investment is very limited, with limited public and private sector investments to modernize the agricultural sector and use water more efficiently. (Annex 2, par. 198)	All Partner Ministries Extensionists Farmers Universities/Technical Schools Private sector Target area citizens CSOs	• Provide farmers with capacity development activities to enhance access to finance, technology, knowledge and finance to climate proof agriculture activities. (component 2) • Demonstrate feasibility of climate resilient infrastructure in component 1 (canals rehabilitation and solar system) and engage private sector in policy planning in component 3 to to potentially upscale investments.
(ii) Shortage of electricity to enable efficient water use practices	The pumps used for pumping water from the canals to the fields use diesel operated engines or the unreliable grid with limited options for use of low-emissions renewable sources like solar. (Annex 2, par. 446)	MoWR and all other line ministries Extensionists Universities/Technical Schools Private sector Target area citizens CSOs	• Provide innovative solar systems to overcome electricity shortages in rural areas • Demonstrate climate smart energy applications and implement knowledge in capacity development activities for technicians and citizens • Develop policies for the promotion of solar rural electrification involving all key stakeholders
(iii) High climate change adaptation deficit and limited farmer awareness about climate resilient technologies and practices	There is a lack of skills of both farmers and extension officers to adapt to climate risks by using more adaptive crop varieties, irrigation technologies and soil and crop management practices that would increase their resilience. (Annex 2, par. 283)	MoA Farmers Extensionists CSOs Private sector	• Develop and implement training curricula for farmers and extensionists to overcome adaptation deficit • Upgrade curricula of universities/vocational schools to capacitate future generations of experts in the field • Develop and implement capacity and awareness-raising activities on climate-smart energy applications for farmers
(iv) Women's lack of awareness and low level of representation	Despite their key role in agriculture production, women have few opportunities to learn about adaptive practices and are often marginalized in farmer communities. (Annex 2, par. 382)	All Partner Ministries Extensionists Universities/Technical Schools Private sector Target area citizens CSOs	• Implementing capacity development activities specifically designed for women's needs in the frame of the Climate Wise Women Programme in Component 2. • Actively targeting women beneficiaries throughout the project in fields normally dominated by male representation (see Gender Action Plan)
(v) Lack of supportive policy for water use and regulation for agriculture production	The inadequate policy and strategic framework lead to inefficient use of inputs especially water and there is need for transformative climate and environment related strategy to respond to the growing climate risks. (Annex 2, par. 191)	All Partner Ministries CSOs Accademia Private sector	• Develop key policies in the sector with the participatory involvement of all key stakeholders and the aim to efficiently organize the water supply for agricultural purposes
(vi) Lack of policy framework to encourage use of solar energy.	There is currently no detailed strategy related to the energy sector to contribute to the country's target to achieve a 20% share of RES within the next decade. (Annex 2, par.342-351)	All Partner Ministries CSOs Accademia Private sector	• Develop key policies in the energy sector with the participatory involvement of all key stakeholders and the aim to upscale all proposed investments to enhance solar rural electrification

23. Despite these constraints, there are some positive aspects which can be capitalized upon to achieve the intended project goals. This includes a vibrant private sector in the food production system, a very strong commitment to policy reform in both the water and energy sectors and strong private sector capacity for investment in RES. Private sector investments in the agriculture sector have increased four-fold in recent years[48] and there is rapid increase of input suppliers who offer a wide range of climate smart irrigation and adaptive technologies and inputs for the agriculture sector. The current project is designed to assist farmers in more efficient use of water in the agriculture sector as the largest user of water and assisting farmers in developing their capacity for adaptation in the face of climate change (Annex 2). The private sector has been very active in the agriculture sector despite the limited support by the government in terms of protecting the sector from inexpensive imports. About renewable energy, the project can capitalize on the strong Government commitment to increased use of solar panels to generate 20% of its total power production capacity from renewable sources to help ease the pressure on the country's hydrocarbon-powered electricity plants. The GOI is keen to introduce reforms in key sectors. Iraq is in process to transition from an economy based on oil and gas (60% of the GDP [GoN,2018]) to one where a resilient agricultural sector can also play its part due to its potential for employment generation. The existing policy frameworks for water management and energy are inadequate and do not fully incorporate climate change adaptation or farmer concerns and are not equipped to deal with the growing demands of water, energy or climate risks. In recognition of this issue, GOI has received support from GCF for readiness work for the development of strategic water and climate management frameworks to support the country. However, more needs to be done in this regard and local communities and national level institutions both need to reorient their management of critical resources and bring about a paradigm shift. There is need for innovation and taking some bold measures that can help transform both the energy and water sectors and the use of water and energy for agriculture production.

24. The project's theory of change is premised on the assumption that "IF farmers are made more aware of climate risks through the introduction of water conserving and green energy technologies and climate resilient farming practices, women's role is better appreciated and they are empowered to play a more active role, capacity of water management institutions is strengthened with improved fiscal frameworks and enabling policy THEN farmers will become more climate resilient and food secure BECAUSE of increased water availability, use efficiency and improved governance, adoption of water conserving and green energy technologies and climate-resilient farming practices. The farmers are expected to adopt technologies which improve their productivity and incomes and reduce their costs.

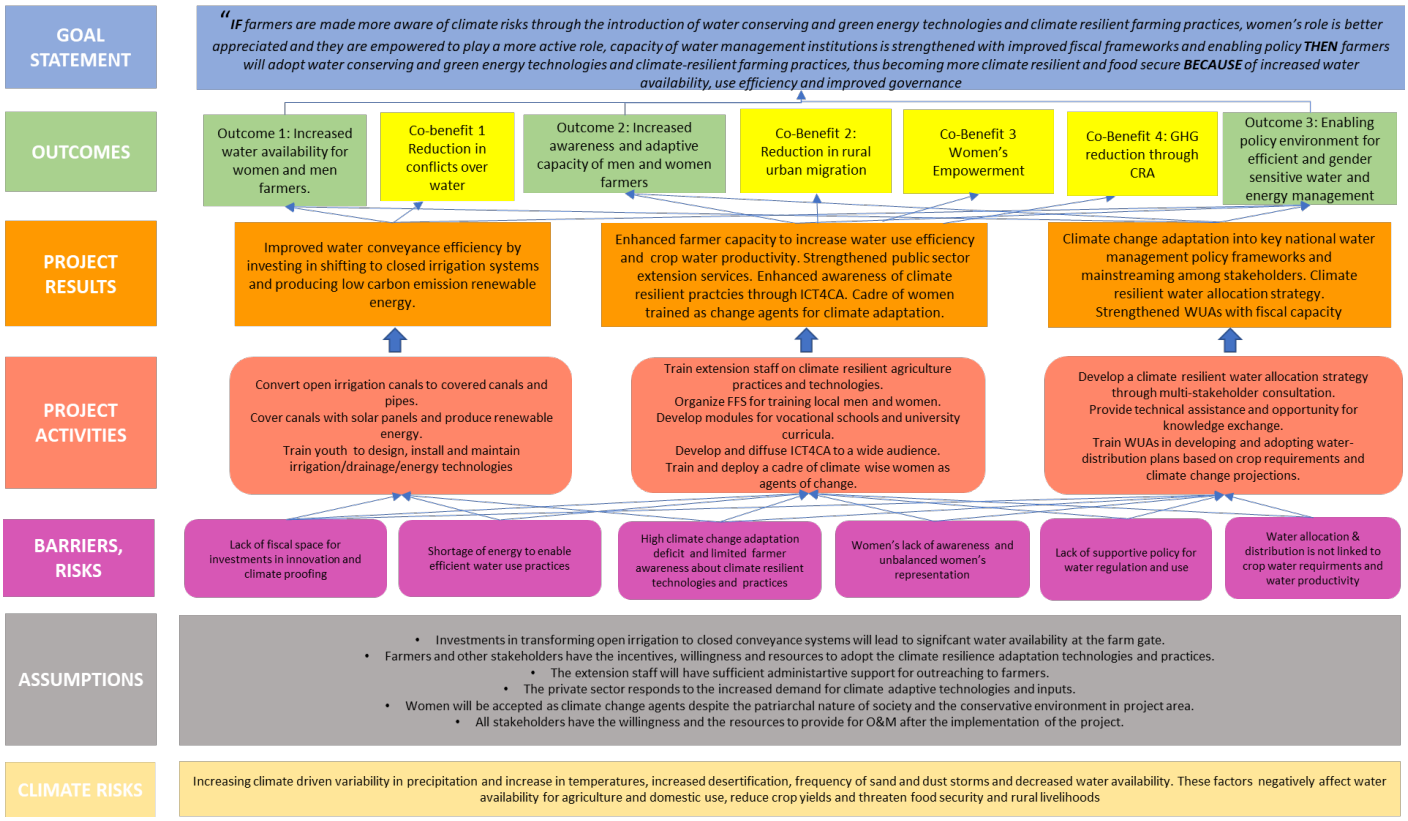
25. The theory of change is premised on the selection of three broad pathways that are incorporated in the three project components to address the constraints identified. A set of activities and inputs has been developed under each component (Figure 3 below) to lead to the expected outcomes. The key outcomes emerging from the project investments are expected to include the following: Outcome 1: Increased water availability for women and men farmers; Outcome 2: Increased adoption of practices and technologies to address climate risks; Outcome 3: Policy environment for efficient water and energy management is enabled

26. The project will have a special focus on women: The TOC of the project recognizes that climate change affects men and women differently based on the gender differentiation of roles, asset ownership and decision-making. Therefore, the project will adopt a gender sensitive approach in the assessment of vulnerability and plan for men and women keeping in mind this differentiation. There is a growing body of evidence which shows that costs and benefits associated with adopting climate-smart agriculture[49] technologies and practices are not evenly distributed among household members [FAO, 2013]. Therefore, "gender analysis must be an integral part of climate-smart agriculture interventions [FAO, 2013]". Based on this understanding, the project will implement a gender-responsive approach to climate-smart agriculture to address the different constraints faced by vulnerable groups especially women-headed households. The project will enhance women's access to resources, services, and information so that they can increase their productivity and well-being. The current proposal subscribes to the GCF approach that meaningful interventions for women require dedicated resources for a Gender Action Plan (GAP) with well-defined implementing roles. A comprehensive GAP with clear responsibilities is presented in Annex 8.

27. The theory of change for scaling up the scope and impact of the project is premised on the experience that there is a growing private sector that can be the engine of growth in the dissemination and supply of adaptive productive technologies, efficient irrigation equipment, crop varieties and inputs and in the investment of low carbon options such as solar energy. Countries which have progressed in scaling up these technologies have done so because of the growth of a vibrant and competitive market developed by the private sector. The project, in coordination with national organizations, will work with both input providers and financial institutions to support the availability of goods and resources for farm investments.

28. Furthermore, in particular Component 3, is building up on the recommendations of the Private Sector Development Strategy 2014-2030 (PSDS). The main goals of this component are to create policies, laws, rules and processes that promote the expansion of the private sector, while improving the services provided by private sector organizations and groups (Pillar II, Activity a[50], d[51], g[52]). The activities of this component are therefore expected to provide the necessary policy framework and support, with private sector involvement in shaping public strategies and a road map, and it is projected to play a major role in de-risking private investments in energy and agriculture. The project will demonstrate the adaptive and solar technology to the public sector, the private sector and to farmers given that, while this technology may be well known in other countries in the region, there may not be sufficient awareness about it in Iraq. The demonstration of these climate adaptive and energy efficient options will lead to a growing demand in the country for the use of the host of climate adaptive and low-emissions technologies.

Figure 3 Theory of Change: Strengthening resilience of Vulnerable Agriculture Livelihoods in Iraq (SRV-ALI) (see Annex 24).



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

Outcome number	GCF Mitigation Results Area (MRA 1-4)				GCF Adaptation Results Area (ARA 1-4)			
	MRA 1 Energy generation and access	**MRA 2** Low-emission transport	**MRA 3** Building, cities, industries, appliances	**MRA 4** Forestry and land use	**ARA 1** Most vulnerable people and communities	**ARA 2** Health, well-being, food and water security	**ARA 3** Infrastructure and built environment	**ARA 4** Ecosystems and ecosystem services
Outcome 1: Increased water availability for women and men farmers	☒	☐	☐	☐	☐	☐	X	☐
Outcome 2: Increased adoption of practices and technologies to address climate risks	☐	☐	☐	☐	☐	X	☐	☐
Outcome 3 Policy environment for efficient water and energy management is enabled	☒	☐	☐	☐	X	☐	☐	☐

If any co-benefits have been identified in section B.2(a), fill in the Co-benefit table below to map each co-benefit to the corresponding category as defined in the FP guidance note.

Co-benefit number	Co-benefit					
	Environmental	**Social**	**Economic**	**Gender**	**Adaptation**	**Mitigation**
Co-benefit 1: Increase in ancillary jobs.	☐	☐	☒	☐	☐	☐
Co-benefit 2: Crop diversification	☐	☐	☒	☐	☐	☐
Co-benefit 3: Acceptance of the	☐	☐	☐	☒	☐	☐

role of women in the water sector						
Co-benefit 4: GHG reduction through CRA	☐	☐	☐	☐	☐	☒

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

29. The objective of the project is to enhance the climate resilience of rural households through the introduction of climate adaptive infrastructure, technologies and farming practices that will stabilize and possibly increase water availability, water use efficiency, and secure agriculture yields at the farm level. The project is designed to increase water productivity per unit of production and reduce food insecurity. The project interventions were selected because of their potential to have a high impact and bring about a sustainable paradigm shift in the agriculture and energy sectors through investments at the farm and the policy level.

30. The project is designed to have three components. **Component 1: Strengthening resilience against climate induced water scarcity** will address water and energy availability to ensure increased water supply, reduce water losses and increase water use efficiency; **Component 2: Climate Resilient Agriculture Production** will address adaptation deficit of farming communities via extension programs, knowledge transfer processes, empowerment of WUAs, and through e-extension systems or Information Communication Technology for Climate Change (ICT4CC); and **Component 3: Scaling-up climate Adaptation through policy formulation and planning** will address the strategic and legal framework for water management and adoption of climate resilient technologies. The project components are expected to work synergistically to enhance the impact and transform the agriculture production systems.

31. The project will be implemented in the governorates of Najaf, Karbala and Muthanna. The selection of the areas was guided by climate change challenges and related vulnerabilities and potential for site-specific Climate Change Adaptation (CCA) interventions (Annex 2, p. 150). While the specific locations of the infrastructure investments have been identified, the investments under Component 2 with regard to production systems will be identified during project implementation in discussion with the Ministry of Agriculture and the farming communities. Component 3 on policy and regulatory frameworks is expected to have an impact at the national level. Last but not least, the project will adopt a gender sensitive approach in the assessment of vulnerability and plan for men and women keeping in mind this differentiation.

32. The project conducted options analysis to evaluate the potential impact of each option and its interventions under each component. The criteria included in evaluating each option considered: the advantages and disadvantages of each option, the cost implications, the climate resilience potential, the value for money and specific related factors to each component.

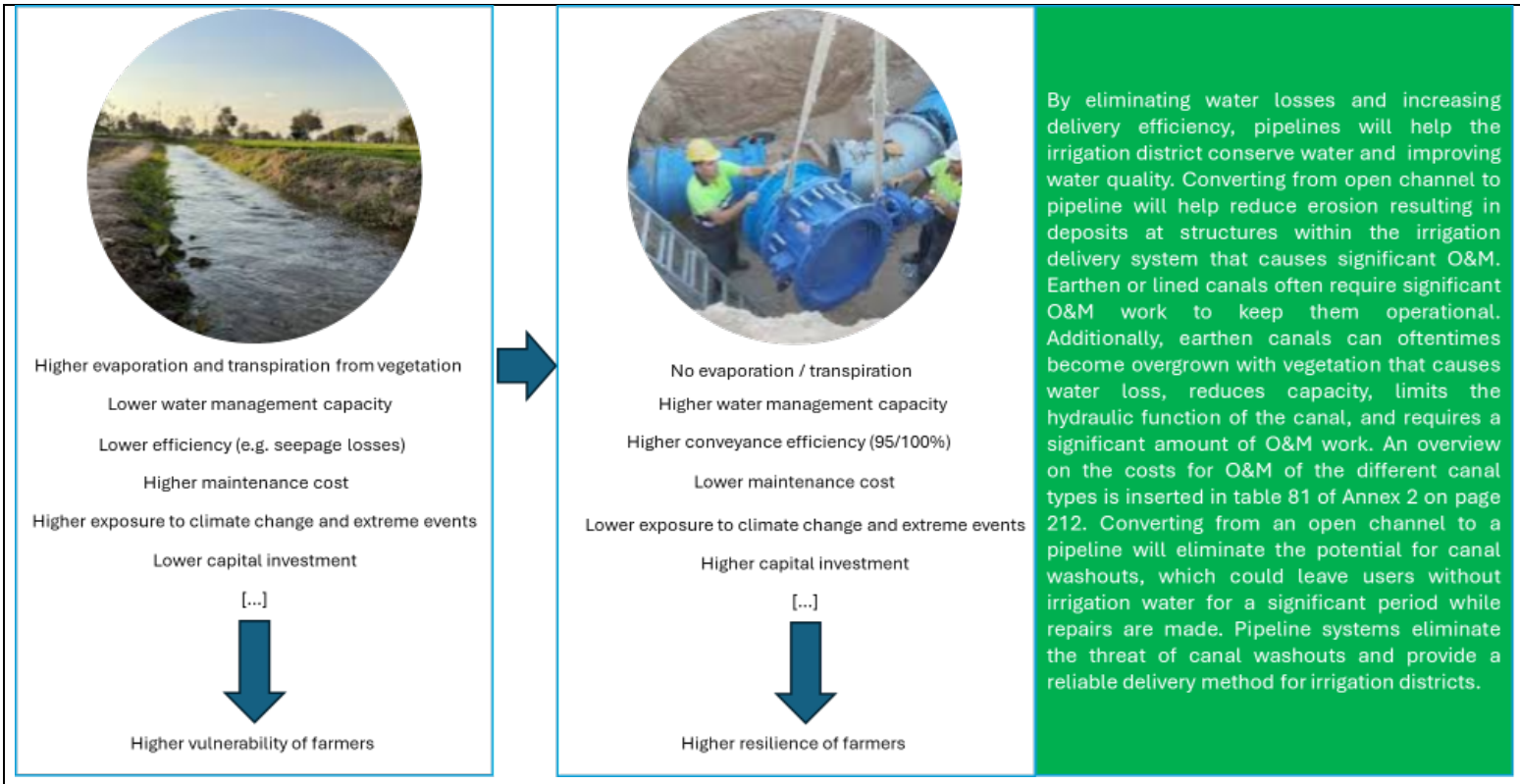
Component 1: Strengthening resilience against climate induced water scarcity

Outcome 1: Increased water availability for women and men farmers

33. This component is designed to address water scarcity and variability due to climate change. The project evaluated deviation of annually accumulated precipitation. In Karbala and on a national level there is a significant increase in rainfall variability[53] (Annex 16A- Figure 36) in the period between 1985 and 2020, with +5.06 mm/dec. and +4.52 mm/dec. respectively. Projections foresee a further increase in variability in Karbala, Najaf and on a national level in the period between 2020 and 2060 in an RCP 8.5 Scenario with +1.43 mm/dec., +0.29mm/dec. and +1.78 mm/dec. respectively[54] (Annex 16A- Figure 41). There were several options considered under Component 1, and these included; Do Nothing Option, the use of the traditional system of lining canals, and the option including shifting of gravity fed canals from open to closed piped systems and installing solar systems on calas that require electricity for the pumping of surface water. The option of converting selected canals to piped systems was selected based on the criteria outlined above and following discussions with key stakeholders on all the options. This option appeared to be the most efficient and effective in dealing with climate change and was also the most feasible from a financial perspective. These options are presented in Table 81 in Annex 2 in the section on Options Analysis. Among the many advantages of shifting open systems to closed system are (i) the equal distribution of water and reduction of conflicts; (ii) reduced groundwater pumping from beneficiaries (17 MCM per year); (iii) reduced evaporation; (iv) lower cost of operation and maintenance (0.75%/Y compared to 2%/Y for lined canals). To be emphasized that the project focused on the promotion of efficiency in irrigation and water optimization processes. No technologies or approaches will be introduced that would lead to the extraction of more water from the ground or from canals. In this regard a crucial innovation is among others the application of water meters to ensure, among other, that farmers use water efficiently based on needs established via clear water allocation processes agreed with the WUAs. In case of the investments in Solar energy, the design of the installations focusses only on pumping of surface water from rivers/main canals to irrigation canals. The natural resources, pumps and energy systems will be solely managed by the DOWR, the risk of over-extraction is therefore mitigated, even in the case of replication of the same investments outside of the project.

Sub-Component 1.1: Investments in irrigation canals upgrading.

Output 1.1.1 Open canals[55] shifted from open to closed systems benefiting 8,457 people



34. In close coordination with the MoWRs and the DoWRs (for additional information on stakeholder engagement, please see Annex 7), stakeholders selected a list of gravity fed canals (Table 6 below) which will be shifted from open to closed systems in the selected Governorates.[56] The MoWR and the DoWR identified canals with the following criteria; (i) adequate water quotas; (ii) free of resettlement, relocation and land acquisition issues; (iii) not budgeted from other resources; (iv) consistent with MoWR's strategic priorities and plans; (v) prepared in consultation with other line ministries where feasibility studies for new proposals are involved to avoid duplication and conflict and (vi) the layout of the selected distributary canals and their watercourses allowed easy access and (vii) no negative environmental and social considerations.

35. The primary goal of this subcomponent is to improve water conveyance efficiency and provide the country with the needed adaptive technologies and technical skills to replicate activities in other irrigated areas of Iraq. The advantage of a closed system is that it is more resilient to climate change (e.g. increasing temperature, extreme events, sand storms)[57] and it requires significantly less maintenance costs (0.75%/Y) compared to lined water canals (2%/Y). The project is intending to use this intervention to showcase with the purpose of scaling up by the GoI with a larger target for the future. The intervention aims at shifting from open distributary and watercourse earth canals to buried irrigation pipelines (Preliminary design is outlined in Annex 2, Appendix 17).[58] The gravity fed pipeline system will follow the same hydraulic principles of an open channel system but in a completely closed circuit and with low speed and pressure. Low speed reduces friction losses but increases the diameter of the pipes. For pipes carrying large flows, the material often used in Iraq (according to DoWR) is ductile iron. Installation is easy and safe for workers who can cut and tap Ductile Iron Pipe on site. For lower diameters (630 mm and below), the material often used in Iraq is PVC pipes. By eliminating water losses and increasing delivery efficiency, pipelines will help the irrigation district conserve water and improve water quality. Converting from open channel to pipeline will help reduce erosion resulting in deposits at structures within the irrigation delivery system that causes significant O&M. Earthen or lined canals often require significant O&M work to keep them operational. Additionally, earthen canals can oftentimes become overgrown with vegetation that causes water loss, reduces capacity, limits the hydraulic function of the canal, and requires a significant amount of O&M work. An overview on the costs for O&M of the different canal types is inserted in table 81 of Annex 2 on page 212. Converting from an open channel to a pipeline will eliminate the potential for canal washouts, which could leave users without irrigation water for a significant period while repairs are made. Pipeline systems eliminate the threat of canal washouts and provide a reliable delivery method for irrigation districts. Furthermore, shifting from open canals to piped ones will also increase the overall resilience of the infrastructure and it will be less exposed to adverse climate impacts such as high temperatures and wind erosion.

36. The upgraded irrigation infrastructure will improve beneficiaries' access to irrigation water during periods of water shortage while also improving their ability to use water efficiently. The distribution of irrigation water will be organized by the WUA. For this reason, the existing off-takes of the secondary canals will be preserved, and the final locations will be determined during the construction phase together with the local population concerned. To ensure that women's views are reflected in scheme design and their access to water is not in any way limited, the project will make a special effort to consult women users of the canal water, women farmers and women-headed households who have a right to access the irrigation water. The project will include in the

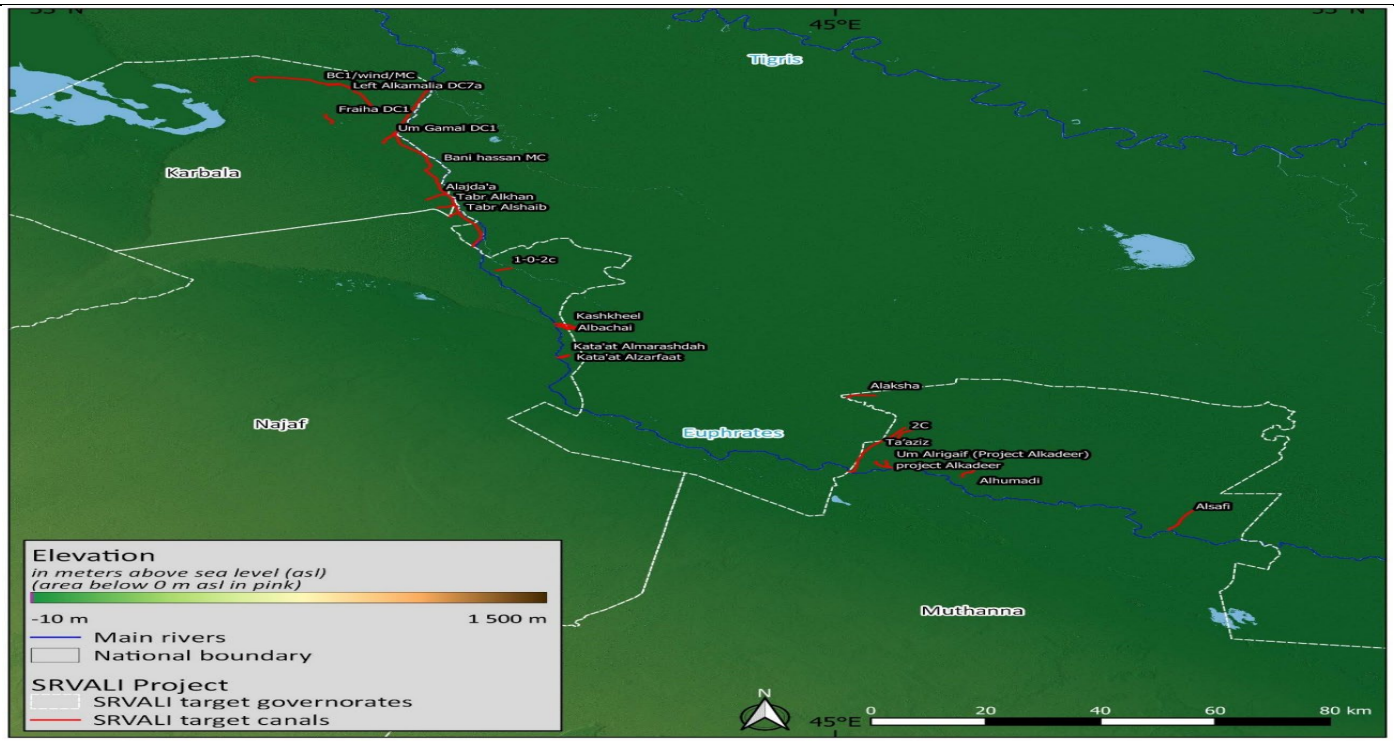
design, washing points and livestock watering points along the canals where the canal water was used for these purposes by the local communities. The Gender Action Plan in Annex 8 provides more details on these aspects.

37. The establishment of the WUAs (see output 1.3.2 in chapter E.6 of this proposal and Annex 2, p. 183-189) will be a precondition for starting the arrangements for the project's interventions in the irrigation infrastructure. Submission of a request by the WUAs for the development of the infrastructure will be the second precondition to ensure ownership and acceptance of the idea of closed irrigation systems. The project is also expected to bring about a paradigm shift through the introduction of a system of water meters. Currently, water is allocated not on the basis of volume but hours during which water is provided for specific time periods based on cultivated area. The current water service fee is set at 5,000 IQD/dunum for each cropping season. In cases where cropping is undertaken in both the winter and summer seasons, the fee is 10,000 IQD/dunum which is equivalent to 27.5 USD/ha/year. Due to the drought in the area, the Government has currently suspended the irrigation fee but is expected to resume when the water situation improves. Providing meters introduces the idea of a reliable water accounting system which is a critical prerequisite to formulate evidence-based policies on allocating water, organizing its distribution and assuring accessibility. Installing water meters does not restrict anyone's access to the water but simply enables better regulation and monitoring. The project will demonstrate the feasibility of prepaid water meteres in collaboration with WUAs in three cases[59] where the upgrades include distributaries and their watercourses. The design of the prepaid meter can take several forms (see paragraph 424 and 425 of Annex 2], and the bidder will make the selection of a particular type with final approval by the supervising engineer. The metering system is expected to generate multiple benefits such as more efficient water use, reduction in collection costs, reduction in energy costs and enhanced equity. The metering system will be designed to collect the irrigation fee through this system. The proposed upgrades including flow-control, flow-measurement, and the installation of individual prepaid water meters would bring a positive outcome to farmers as it will allow them to have more equitable access to surface water. It is estimated that improved access to surface water resources would allow farmers to save up to 54.9 USD/ha/year. Also, these improvements will allow farmers to access surface water instead of pumping groundwater to supplement their needs as is the case currently. The savings from energy used to pump groundwater is estimated at around 19 USD/ha/year.

Table 6 List of canals selected for rehabilitation and upgrading

Gov.	ID	Name	district	Irrigation project	latitude	longitude	Gross irrigated area	length (m)	Discharge (l/s)
Najef	1	**Kashkheel**	Al Manathra	Kifil-shnafiyah	31.919109	44.493493	638.03	10,200	3,000
	2	**Albachai**	Al Manathra	Kifil-shnafiyah	31.910881	44.495381	312.71	2,000	1,000
	3	**Kata'at Alzarfaat**	Al Mishkhaab	Kifil-shnafiyah	31.803088	44.498539	114.55	2,500	600
	4	**Kata'at Almarashdah**	Al Mishkhaab	Kifil-shnafiyah	31.804021	44.498449	49.26	2,600	300
	5	**Tabr Alkhan**	Al Haydariya	Bani-hasan	32.326298	44.308007	84.77	3,500	250
	6	**Tabr Alshaib**	Al Haydariya	Bani-hasan	32.299207	44.3154	54.98	4,000	500
	7	**Alajda'a**	Al Haydariya	Bani-hasan	32.363239	44.293037	79.04	6,000	1,000
Karbala	8	**Left Alkamalia DC7a**	Al Husainiya	Husainaia	32.729084	44.116733	473.08	7,550	316
	9	**Fraiha canal DC1**	Al Husainiya	Husainaia	32.636659	44.074837	148.91	4,250	250
	10	**Um Gamal DC1**	Al Jawal algharbi	Bani-hasan	32.571313	44.199842	1,179.84	4,330	520
Muthana	11	**project Alkadeer /Um Alrigaif**	Hilal	Shnafiyah-nasiriya	31.427566	45.09712	286.37	3,500	300
	12	**Alhumadi canal**	Majd	Muthanna	31.393665	45.23081	572.74	2,500	400
	13	**Alaksha**	Najmi	Diwaniyah-shafi'iyah	31.666198	45.021719	687.29	7,000	220

Figure 4 Location of the Selected Canals



38. The implementation of this subcomponent will entail procuring a service provider and preparing engineering designs, construction and supervision of works, operation and maintenance and technical support and oversight. The detailed activities and sub-activities are outlined in section E.6. Detailed design for the irrigation system rehabilitation will be carried out during the first year of project implementation. Civil engineering works and equipment will be procured through competitive open bids. The consulting firm selected (procured through an international bidding process) for design will establish elements necessary to guarantee good operation and maintenance of the targeted irrigation schemes as part of the detailed design[60]. The tentative schedule for the implementation of construction works and supplies is expected to last 24 to 27 months[61] with three lots (one for each Governorate). The Project will establish a mechanism to share information between the Ministry of Water Resources in Baghdad and the Directorates of Water Resources and water users' associations in individual governorates to ensure information sharing and communication on the schedule of construction works between the relevant local parties, the MoWR and the MoA. Work will be organized in such a way that the canals will be functional without long downtime.[62]

39. At the end of the construction phase, an Operation and Maintenance Manual will be prepared by the consulting firm, where all the elements of the equipment installed will be described, including the instructions of the equipment suppliers. The DoWR in each Governorate will be responsible for the operation and maintenance of all investments after commissioning of the rehabilitated systems. However, the responsibilities for operation and maintenance of the irrigation and drainage infrastructure would be transferred gradually to the WUAs. Arrangements, such as a scheme management code and training, will be put in place between the responsible Government agency (DoWR) and the WUAs. The future management of the upgraded system will be put in the hands of the Water User Associations (WUAs). The DOWR will secure the commitment of the WUAs to the system management. Based on the experience, implementing partners will identify specific aspects related to refining water allocation policies for improved governance and operational aspects of the irrigation system. As reported in Annex 4, the total cost of the upgrade of irrigation canals is estimated at USD 22.7 million (engineering design 6%, works, 72%, construction supervision 6%, logistic 2%, O&M 4% and technical assistance 10%). The cost estimates are based on the preliminary design for the Left Alkamalia DC7a and DC7a-1 distributary canals and their watercourses (see Annex 2 appendix 17). This preliminary design was used to establish an average investment cost per ha for canals upgrade that was then used to estimate the budget for the upgrade of the pre-selected canals as shown in Table 7 above.

Activities	**Description**
1.1.1.1 Engineering design	Prepare engineering designs, bills of quantities, cost estimates and tender/procurement documents (consulting services). In close collaboration with all concerned stakeholders (i.e. government agencies and water users), undertake feasibility studies and prioritize irrigation water control and systems for the fast tracking of repair, rehabilitation and construction works
1.1.1.2 Construction supervision	Provide services for control and supervision of construction works
1.1.1.3 Construction works	Implement the planned changes to the selected irrigation canals (works). Repair, rehabilitate and construct selected irrigation infrastructure through MoWR approved contractors. Labor-intensive activities, utilizing local labor inputs as much as practicable, are encouraged. The

	period of canal closure for construction will be agreed with water uses to cause the least disruption in water supply.
1.1.1.4 Operation and maintenance	Water User Associations will be involved throughout the whole process in the selected Governorates for the operation and management of the improved systems. After the establishment of WUAs, it is the intention of government that these systems will be managed by these WUAs. The responsibilities for operation and maintenance of the irrigation and drainage infrastructure would be transferred gradually to the WUAs. Arrangements, such as a scheme management code and training, will need to be put in place between the responsible Government irrigation structure (DoWR) and the WUAs. The rehabilitation (upgrade) will also include a review of the water allocation modalities for the targeted schemes. The consulting firm will establish as part of the detailed design elements necessary to guarantee a good operation and maintenance of the targeted irrigation schemes. At the end of the construction phase, an Operation and Maintenance Manual should be prepared by the consulting firm when all the elements of the equipment actually supplied will be known, including the instructions of the equipment suppliers.
1.1.1.5 Technical support and oversight	To provide technical support to the PMU, the project will hire a highly qualified irrigation expert and an environmental, an energy expert, a social safeguards specialist and a procurement specialist to support the process and the execution of all technical activities.

Sub-Component 1.2: Investments in Renewable Energy Systems

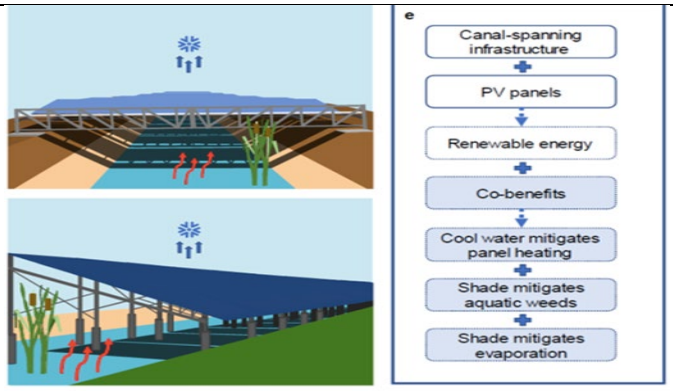
Output 1.2.1 Water canals covered with solar panels, providing 1,000 kW of renewable energy

40. Despite large investments in the energy sector, Iraq has not achieved full energy security (Annex 2, page 420)) Power cuts are frequent especially in rural areas (the grid provides only between 11- 18 hours of electricity per day throughout the country with less reliability in rural areas). Solar energy potential is significant, especially in southern regions, but largely unexploited (Annex 2 Map-Figure 45). In line with the national energy strategy (WB, 2012) the project foresees therefore to enhance solar energy applications in rural agricultural areas while strengthening the Water-Energy-Food-Nexus as a driver for sustainable rural development. As successfully tested in other countries (e.g. India, Lebanon, USA, Egypt) solar panels installed on top of waterways or canals can generate electricity with better performance, while reducing evaporation [McKuin, et al, 2021; LCEC, 2020; Srivastava, 2016]. The estimated 1,460 MWh[63] of electricity generated will be used to operate the stations managed by the DOWR solely for the purpose of pumping surface water from rivers to primary canals which often suffer from unreliable electricity from the national grid or, in case of utilization of generators, from insufficient diesel supply. The project foresees therefore the installation of at least three Solar Photovoltaic (PV) systems (at least one in each beneficiary Governorate) for aforementioned pumping stations totaling a capacity of up to 1 MWp to demonstrate the feasibility and sustainability of the technology. The systems will significantly increase energy security and therefore a more reliable distribution of water. Panels will be installed on top of recently lined water canals, allowing saving of valuable agricultural land and reducing evaporation of water and algae growth. The installation of solar panels will entail the preparation of detailed engineering design, construction and installation of the solar system, construction supervision, training on operation and maintenance of the system and technical support and oversight.[64] The total cost for the installation and operation and maintenance (engineering design 3%, works, 91%, construction supervision 2%, O&M 3% and technical assistance 2%) during project implementation of solar systems on water canals is estimated at USD 2.1 million (Table 60 Annex 2), shared among GCF and co-financiers (GCF 35%, Global Affairs Canada (GAC) 62%, and Iraqi government 3%. These estimates[65] are based on the preliminary feasibility assessment for canals in Najaf and Muthanna (see Annex 2, Appendix 20) and were used to establish average conservative investment costs per 1,000kWp of the installation of solar systems on the pre-selected canals shown in Table 7. Assessment of the financial feasibility of all infrastructures foreseen in Component 1 are presented in Annex 25, Figures 9 to 13.

Table 7 List of proposed canals for solar systems

Governorate	Name	District	Latitude	Longitude	Gross irrigated area (ha)	global horizontal irradiance (kWh/m2/a)[1]
Najaf	Bani Hassan MC	Al Haydariya	32.3648	44.2934	2,500	1,768
Najaf	1-0-2c	Al Abassiyah	32.1084	44.4094	600	1,748
Karbala	BC1/wind/MC	Al Husainiya	32.7234	44.1253	3,004	1,765
Muthanna	Alkadeer	Hilal	31.4253	45.1024	2,000	1,765
Muthanna	2C	Al Rumetha	31.5514	45.1368	850	1,783
Muthanna	Ta'aziz	Al Rumetha	31.5616	45.1260	NA	1,767
Muthanna	Alsafi	Al Khudir	31.2123	45.6062	NA	1,774

Figure 5 Benefits of Solar System installations on water canals. (Source: McKuin et al., 2021)



Activities	Description
1.2.1.1 Engineering design	Prepare engineering designs, bills of quantities, cost estimates and tender/procurement documents (consulting services). In close collaboration with all concerned stakeholders (i.e. government agencies and water users), undertake feasibility studies and prioritize irrigation water control and systems for the fast tracking of repair, rehabilitation and construction works
1.2.1.2 Construction supervision	Provide services for control and supervision of construction works
1.2.1.3 Installation of solar systems	Implement the planned changes to the selected sites (works).
1.2.1.4 Operation and maintenance of Solar Systems	The DoWR in each Governorate will be responsible for the operation and maintenance of all investments after handing over. The Water User Associations will be involved in all related capacity development activities.

Sub-Component 1.3: Investments in knowledge transfer, behavior change and training

Output 1.3.1 500 technical staff trained in design, installation and maintenance of irrigation, drainage and energy technologies

41. In Iraq, there are no specialized vocational schools for irrigation and drainage, but there are departments of water resources technologies (irrigation and drainage techniques branch) at the level of technical institutes, that provide a two-year curriculum after high school for field agents involved in day-to-day operation and maintenance of irrigation schemes. There are also departments of water resources in colleges of engineering that train irrigation engineers, and the public sector has agricultural vocational schools that train field agents for agriculture production activities. To ensure the sustainability of its actions, the project will update the topics related to irrigation and drainage in the technical curricula of selected schools and develop the capacity of technical staff to teach the subject. Regarding the solar covered canals and the utilization of PV systems in the agricultural field, the project will design a module to be integrated in the curricula of agricultural vocational schools and the technical institutes. This will highlight the advantages and possibilities for solar energy in agricultural production and solar energy applications.[66] Furthermore the development of special training modules for the private sector, SMEs and startups will be considered. A validation workshop will be organized at the end of the process and the information disseminated through Training of the Trainers activities targeting teachers in these institutions. A detailed list of activities and sub-activities is given in section E.6.

42. The capacity building of technical staff[67] will be undertaken in three stages: an assessment to define the needs, followed by the design and finally the implementation of a multi-year capacity development program targeting the change agents, and ensuring the transfer and application of the knowledge acquired through this process. The training will provide practical knowledge and deeper understanding of issues and topics related to design, installation and maintenance of irrigation, drainage, and energy technologies. The project is also using participatory approaches across all its interventions that ensure sustainability through close collaboration with the key partners and beneficiaries by engaging male and female farmers in all activities. As dictated by Law 12, 1995 a legal agreement will be sign between all the new WUA and the Directorate of Water Resources (DoWR) of the MoWRs as a partnership agreement/ MoU. This will regulate the responsibilities of both parties to deal with these hydraulic units. Therefore, after completion of the project, operation and maintenance of hydraulic units will become full responsibility of WUAs.

Table 8 Technical staff to be trained - selection criteria

Selection criteria	Description
Status	Field agents working with the Directorates of WR in studies and design section, implementation section, operation section, planning section and WUA section
Residence	Priority will be given to beneficiaries from target areas and to women field agents

Activities	Description

1.3.1.1 Capacity development of technical staff	Capacity building will be approached in three stages: holistic assessment to define the needs, design and implement a multiyear extensive capacity development program targeting the change agents, and ensure the transfer and application of the knowledge acquired through this process. The training workshops are intended to enhance local capacity on how to design, install and maintain proposed technologies. Priority will be given to beneficiaries from target areas. Nonetheless, the project will include in the training interested candidate from the entire country from the MoWR, MoA, IME and MoE.
1.3.1.2 Update vocational schools and technical institutes' curricula	A first package of activities that foresees the creation of special module to be integrated in the curricula of agricultural vocational schools and the technical institutes informing about the advantages and possibilities for solar energy in agricultural production and informing about the advantages and possibilities for water savings technologies including solar energy applications to that end

Output 1.3.2 15 WUAs supported in developing and adopting more efficient and climate sensitive water-distribution plans

43. The project will build on the work achieved through JICA assistance to develop the sustainable irrigation water management by WUA in model sites. The project will adopt and promote an approach that integrates social and technical aspects in modernizing the irrigation systems management in conjunction with Components 2 and 3. This presents a paradigm shift and would involve not only rehabilitation (upgrade), but would also require the establishment of suitably sized, financially viable, and autonomous (technical) hydraulic units for the self-governing WUAs to establish and/or strengthen. Technical design would therefore require attention to flow-control and flow-measurement at key outlet points, to enable performance-based legal agreements between the WUA and the higher-level, bulk-water operator (DoWR) and enable practical and enforceable distribution modalities within the boundary of the WUA areas of operation. This will require establishing and supporting WUAs in the selected project areas and reinforcing WUA members' technical and managerial capabilities. The potential for inclusion of women in these forums will be a key aspect of the project approach given the role of women in the agriculture sector and the fact that women have previously only been marginally involved (See Annex 8). In this regard, the project will build on the experience of JICA in the sector to adopt arrangements conducive to women empowerment and ensuring equitable distribution of benefits between men and women.WUAs are part of a long-lasting plan of the State to modernize irrigation management. The project will support WUAs with training on different topics including governance, financial sustainability, and technical expertise. Specifically, a Technical Assistance (TA) package will be deployed in the targeted governorates related to:

- Irrigation aspects of the land tenure arrangements and usufruct rights of women farmers,
- WUA rights and duties,
- WUA legal/financial oversight,
- Management of the Water Users Association, including management of Board meetings, General Assembly meetings, and the mechanism for making decisions and voting.
- Infrastructure rehabilitation and transfer agreements if any,
- Rights and duties of the parties in charge of irrigation scheme management,
- Water fee recovery and other sources of funding for WUAs,
- A dispute resolution mechanism if any,
- WUA membership criteria (inclusion of women based on usufruct); and
- Place of female leadership in WUAs.

44. Based on this first step, the TA will also work at national level supporting the preparation of an appropriate legal framework for irrigation management by the WUAs within the framework of the existing Water Code. The TA mission will also include:

- Organize and conduct training in good practices/technical and irrigation scheduling with targets and outreach measures to ensure participation of female farmers around the three defined modules; [68]
- Define the level of support needed at each WUA to insure implementation and respect of the scheme management code and the rules of procedures; and
- Assess and define the support, with block grants to each WUA, improvements of their facilities (buildings, equipment, etc.).

Activities	**Description**
1.3.2.1 Establish and support WUAs in the selected project areas	The project will work closely with the WUA section within both ministries (MoWR and MoA) to mobilize actions and complete the procurement and logistical preparations for establishing and/or reinforcing the capacities of WUAs in the selected project areas. A Technical Assistance (TA) will be engaged through a competitive bidding process to help assess the legal framework in which WUAs operate in Iraq and define and/or clarify the management rules for irrigation schemes in the targeted governorates. Based on this first step, the TA will also work at national level for supporting the preparation of an appropriate legal framework for irrigation management by the WUAs within the framework of the existing Water Code. The TA

	mission will also define the level of support needed at each WUA to insure implementation and respect of the scheme management code and the rules of procedures.
1.3.2.2 Reinforce WUA members' technical and managerial capabilities	The TA mission will also include organizing and conducting training in good practices/technical and irrigation scheduling with targets and outreach measures to ensure participation of female farmers around the three defined modules: i) Developing and adopting water-distribution plans based on crops requirements and climate change projections; (ii) minimizing degradation of water quality in the surface and ground water through improved agriculture and irrigation practices; and (iii) managing, operating and maintaining irrigation schemes.

Component 2 : Climate Resilient Agriculture (CRA) Production

Outcome 2: Increased adoption of practices and technologies to address climate risks

45. This component is designed to address some key barriers faced by farmers in the adoption of farming practices that are more resilient to climate risks and change. Farmers in the project area lack awareness about efficient and climate smart irrigation practices, crop water requirements, appropriate crop mix given the soil-type and temperature conditions. There is also limited knowledge about improved inputs in the market and their use as both the extension services and the private sector focus on the larger farmers. The knowledge of the public sector extension service is outdated but there are a large number of extension agents in the field. The knowledge base of the extension agents needs to be upgraded to inform them about existing research and improved technologies. More detail and analysis of the agriculture sector and SWOT analysis of the Extension service is presented in Annex 2, p. 123 - 127.

46. The project expects to deal with some of these constraints by upgrading the skills of the extension agents and farmers. The project will provide training to farmers and build improved opportunities for engagement among the farming community by organizing them and encouraging the lead farmers to demonstrate their experience in resilient and adaptive practice and facilitating continued interaction with the private sector through the local forums and networks established. The various options for strengthening smallholders' resilience were assessed from among those deployed traditionally in the agriculture sector. These are presented in Table 82 in Annex 2 in the Options Analysis section. The Farmer Field School methodology was selected as the most efficient and effective mechanism for implementing the adaptive practices in the selected Governorates. The FFS have been found in many previous projects to transform into networks that facilitate greater interaction among the farming community, extension agents and the private sector.

Sub-Component 2.1: Strengthening Adaptive Capacity of Farmers

Output 2.1.1 400 Extension Staff trained on climate resilient agricultural practices and technologies to train 10,000 farmers in adaptive practices and technologies

47. The agricultural sector is highly vulnerable to climate change. Farming sector productivity and resilience is exacerbated by outdated farming practices such as flood irrigation which leads to waterlogging, salinization, and low efficiency. Surface irrigation system is practiced in 95% of irrigated areas and crop intensity does not exceed 85% of cultivated land. On average, only 40% of the water applied is beneficially used by the plant (Kanaan A. & al, 2021). Based on interviews with private sector suppliers, there is evidence of a growing interest in climate-resilient production infrastructure and modern irrigation systems as farmers seek to optimize water use on farms, enhance crop diversification and improve soil management practices. There is a need to increase the small-holders capacity for adapting to climate risks which are growing. The Ministry of Agriculture (MoA) is responsible for assigning cropping patterns to the farmers to produce "strategic crops", for distributing input rations at subsidized prices, and for marketing outputs at controlled prices. However, the capacity of the extension staff to assist farmers with adaptive agriculture practices is limited and there are limited mechanisms in place to introduce the extensionists to adaptive practices or inform them about changing weather patterns or provide early warning of climate events. Therefore, the project will also assist the private sector in the capacity strengthening initiatives. This component is designed to enhance the capacity of smallholders to adapt to changing climate patterns and water availability, enhance their food security and improve their livelihoods through more appropriate crop-mix that adds value.

48. The set of activities that will be undertaken to address the constraints outlined include developing a training curriculum to support the adoption of CRA, train master trainers who will conduct the training for extension staff. The project will develop a team of 12 Master Trainers (at least four of which will be women) for CRA of which 3 will work at the national level and 3 in each governorate. The master trainers could be staff members from the national extension service or hired experts. The MTs will be trained by the technical experts who have been recruited to develop the training material. The Master Trainers will conduct the training for 400 extension staff who will conduct the FFS with the farmers (Annex 2- p. 189 onwards). The selection criterion for the extension staff is outlined in Table 9 below.

Table 9 Extension staff - selection criteria

Selection criteria	Description
Status	Be an extension officer working in a public or private development institution. Priority will be given to public sector officers and to women field agents
Type of Contract	Full staff or under temporary contract
Area of operation	Priority will be given to public sector officers working in the target areas and to women field agents

Other criteria	Cleared by direct supervisor to participate full time in the training program.

Activities	Description
2.1.1.1 Technical coordination and oversight	To provide technical support to the PMU, the project will hire highly qualified staff to support the implementation of the output and all technical activities.
2.1.1.2: Develop training curricula to support the adoption of CRA.	This set of activities is designed to put in place arrangements for implementing a training programme for CRA.
2.1.1.3: Train the master trainers who will conduct the training address to the extensionist team.	Develop a team of Master Trainers for CRA
2.1.1.4: Conduct the training of extension service staff	Put in place the arrangements for training of extension staff.

49. The selected extension staff will conduct Farmer Field Schools and demonstrations for farmers. Section E.6 outlines the detailed project activities and sub-activities. An overview of a preliminary list of topics to be covered for the Master trainers is given in Table 10 below. The topics selected are those which are the most impacted by climate threats and are designed to help build the resilience of smallholders that will also be provided on-farm financial model to ensure profitability and willingness to maintain and sustain these interventions. The topics will be validated and adjusted as part of the implementation of this component during implementation.

Table 10 Overview on the preliminary list of topics covered in the training

Topic	Subtopic	Climate resilience approach	Resilience Benefit indicators
1. On farm water saving irrigation methods / technologies	• Flood irrigation + plot/land leveling • Furrow irrigation + multi-crop bed planter • Sprinkler irrigation (mini, micro, and pivot) • Drip irrigation • Irrigation scheduling and avoiding misuse • Monitoring of soil water content. • On farm water management	• Crop water stress • Water savings	• Improve water application (use) efficiency • Improve crop water productivity (at field level) • Increase cropping intensity
2. Resilient crop and soil agricultural management	• Application of the three principles of conservation agriculture: (minimum tillage, soil cover, crop rotation) + Organic fertilization • Appropriate crop / variety selection (use of water stress and salinity tolerant crops / varieties)	• Crop water stress • Water savings • Salinity • Heat tolerant varieties	• Improve crop water productivity (at field level). • Improve crop production yields • Improve agroecosystems • Avoid dust and sandstorms • Improve crop water productivity (at plant level). • Decrease the agricultural inputs (seeds, fertilizer and fuel) • Increase soil organic matter content • Increase soil water retention • Application of nature-based solutions to mitigate environmental degradation (e.g. shelterbelts)

Output 2.1.2. Enhanced capacity of 10,000 farmers in Climate Resilient Agriculture

50. It is expected that 10,000 farmers[69] (3,000 women) will be trained through Farmers Field Schools (FFS), implemented through demonstration plots, which entails a participatory adult learning methodology where participants learn new practices and adopt technologies that will allow better weather, crop and irrigation water use, understanding of soil characteristics, plant development and assessment of costs and yields. Farmers, as private sector stakeholders, will be involved in detailing activities from start-up of the project and Output 2.1.2 is expected to showcase in this regard the practicality of investments in climate resilient agriculture (CRA). The process will demonstrate: (i) the economic benefits of adopting recommended CRA practices; and (ii) the mitigation benefits deriving from more productivity-oriented practices. Table 11 below reports how FFS will support farmers in the application of key climate resilient agriculture and irrigation practices and technologies and how these will have positive impacts in terms of adaptation and avoided emissions (Annex 22 and Annex 23 additional details on adaptation and mitigation impacts). While the topics indicated below are comprehensive, there are several ways in which they can continue to be updated. This is expected to be through the enhanced capacity of the technical extension staff who will continue to add topics and secondly through the interaction with the private sector input suppliers who are generally very up on the latest technologies and inputs and is in the lead in introducing these through sales to farmers. To be highlighted furthermore that the FFS addresses some of the CRA topics with a significant climate change mitigation impact (see also Table 11) that are further quantified in Annex 22. The mitigation impact will be under the constant supervision of the extension staff of the Ministry of Agriculture.

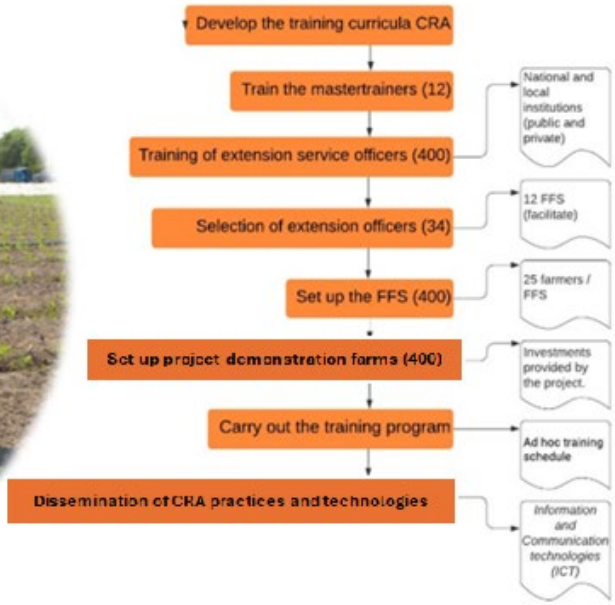


Table 11 Indicative List of Topics

Topics[70]	Climate Change issue addressed
On farm water saving irrigation methods, land leveling, furrow irrigation, sprinkler, and drip irrigation methods, monitoring of soil water content	Adaptation: Farmers will be able to cope with the increased evapotranspiration caused by increasing temperatures and water deficit. Farmers will be able to produce for more cycles, reducing the amount of inputs and water needed. This will allow for increased productivity per unit of water and more stable income for households. Furthermore, the activities will also contribute to improved soil and reduced salinity. Mitigation: Shift to high carbon input and conservation agriculture improves the capacity of soils to act as carbon sinks. Change in the water management of rice cultivation from continuously flooded irrigation to an irrigation system with single drainage period. Mitigation co benefits are estimated to correspond to 1.3 mln tCO2 over the lifetime of the project (see Annex 22 for more details)
Resilient crop and soil agricultural management practices, like: application of the three principles of conservation agriculture (minimum tillage, soil cover, crop rotation), organic fertilization, change from low carbon input to high carbon input, appropriate crop and variety selection,	

51. As a part of the farmer's business development capacity around each FFS, the project will also introduce participants to private sector partners[71] providing services that can help them link to both input and output markets and transform food production systems. This is in line with the objectives of pillar II of the PSDS that foresees among others to "improve the quality of services provided by private sector institution and associations to businesses". The project will provide advice and information on how producers can access state subsidies designed for purchasing seeds for more resilient crops, irrigation equipment, and machinery. This activity will be carried out by the extension workers who will be trained by the Master Trainers. The specific activities will entail establishing FFS[72] for both men and women and establishing demonstration farms to disseminate information[73] about the benefits of the selected practices. It is expected that 400 FFS will be organized with 25 farmers in each school.[74] It is expected that separate FFS will be organized for women. The beneficiaries selected will be from among those indicated in Table 12 below. Nevertheless, the farmers participating in the training will be from among those who are willing to participate in the training. The criteria given in Table 12 will be used to ensure that those farmers are selected who can capitalize on the training and need it most. In addition, based on the experience of previous FFS, it is expected that each of the FFS trained will also disseminate some of the practices learnt to at least another three farmers in their neighborhood, thereby extending the outreach of the FFS indirectly to others.

Table 12 FFS Beneficiary selection criteria

Selection criteria	Description
Farmer status	Be a full-time farmer whose productive unit is located in the governorates/areas selected by the project.
Size of farm	Small-scale producers (less than 10 ha) will be given priority.
Gender of Farmer	At least 30% of those selected will be women with priority given to women-headed households.
Other criteria[75]	Be willing to share what they have learned with other farmers.
	Be willing to dedicate time and show interest to regularly attend the FFS training sessions during the crop cycles (on average five months).

	Be willing to invest their own resources (labor, seeds, machinery, fertilizers, etc.) to implement the new practices and technologies.

Activities	Description
2.1.2.1: Set-up the farmer field schools for training local farmers	This activity will allow the organization of at least 400 groups of farmers interested in implementing CRA. Each group will consist of a maximum of 25 producers.
2.1.2.2: Set up 400 project demonstration farms or plots to validate the benefits of the selected CRA practices and technologies.	Designed to disseminate the good CRA practices learnt at the FFS.

Output 2.1.3. 100,000 farmers reached through ICT4CC technologies

52. The project will have an outreach to 100,000 farmers, of whom at least 30,000 are expected to be women for CRA through Information Communication Technology for Climate Change (ICT4CC) actions. The use of ICTs will be promoted to complement and strengthen the observation capacity of farmers on the ground through the FFS, deduce from observations, and apply the findings. The project will deploy a user-centric design approach in the development of the ICT4CC. Farmers and end users will be consulted on the design and the way information will be displayed to ensure local and gender aspects are included in the design to improve uptake. The farmers and end users will be consulted, and any messages developed will be field tested to ensure their relevance and comprehensibility for them. The project will begin by confirming the climate change information needs for farmers and using that for the preparation of an action plan for ICT and then disseminate the ICT products among farmers of each governorate and at the national level. The detailed activities and sub-activities are outlined in section E.6. The project will develop media programs to be broadcast in collaboration with Government, Universities and the media aiming to reach a wider audience to raise awareness on climate resilient approaches, including climate tolerant crop varieties, efficient water management and irrigation systems, advantages of renewable energy and recycling, sustainable land use practice, etc. The project will also disseminate training and communication materials via mobile telephones and social media channels (WhatsApp, Facebook,[76] etc. In addition, the existing web-based knowledge sharing platform launched by the Ministry of Agriculture (MoA) in 2016 called the Iraq Rural and Agricultural Knowledge Exchange Network (IRAKIN) will be used to share additional information generated by the project with reference to climate resilience. The activities will be linked with on-going work on digital extension that FAO is implementing in Iraq, Egypt and Jordan to connect research institutions with farmers and extensionist as well as facilitate farmer to farmer platforms.

Activities	Description
2.1.3.1. Enhance awareness of climate resilient agricultural practices through ICT	The project will hire a national expert who will be responsible for preparing a rapid assessment of the use of ICT in the agricultural sector and based on this analysis, will develop an ICT4CC action plan that will articulate the actions proposed in the project with ongoing government initiatives and those of other development partners.

Sub – Component 2.2. Enhancing Awareness about Renewable Energy Applications for agriculture

Output 2.2.1 Technical capacities of 90 stakeholders and knowledge of 12,000 citizens on solar energy increased through trainings and awareness raising events

53. Agriculture is a highly energy dependent sector, and some irrigation systems can only work with consistent and reliable energy supply. In areas where constant electricity is lacking and/or diesel fuel difficult to purchase or expensive, Solar Powered Irrigation Systems (SPIS) can significantly increase energy security and provide innovative solutions for clean energy. SPIS can be used in large-scale irrigation systems as well as for decentralized, small-scale irrigation and are recognized as innovative mitigation and adaptation measures in the agricultural sector. Calibrating SPIS is however a complex procedure and needs proper understanding and configuration of water demand (water requirements and irrigation calendar) and supply side (the PV and Pumping systems). Furthermore, the users need to be trained on aspects related to sustainability of the technology.

54. The scope of the activities will include dissemination of climate sensitive technical innovations for SPIS based on international best practice and raising awareness of the technical and economic feasibility of the technology. For this purpose, the output foresees the development of specialized trainings for extensionists and other stakeholders and awareness raising events for the citizens of the three governorates to increase knowledge about the sustainable utilization of solar energy and related investment opportunities. To increase awareness of the public on the technology, each year (from Y2-Y5) one public event demonstrating the functionality and advantages of solar energy will be organized through open energy days in a different municipality of the selected governorates. For this purpose, a mobile training laboratory will be established and equipped with

awareness-raising material. Ideally, the open energy days will be organized in synergy with other exhibitions/fairs/events taking place to increase visibility (Section E.6).

Table 13 Beneficiaries of SPIS training – selection criteria

Selection criteria	Description
Minimum education	Graduate in subjects related to agriculture, natural sciences, engineering. Other topics can be accepted in case the candidate possesses 5 years of relevant technical work experience
Residence	Priority will be given to those residents of Najaf, Karbala, Muthanna
Experience	Work experience in irrigation and/or energy sector
Gender and youth	Women and youth will be included in the training.
Other criteria	Priority will be given to extension officers or representatives of WUA. Eligible participants are also representatives of companies working in the irrigation/energy sector

Activities	Description
2.2.1.1 Enhance Technical Capacities of extensionists and other stakeholders on Solar energy for agriculture	Organize training workshops for stakeholders on technical and economic advantages and feasibility of the Solar Powered Irrigation systems (SPIS). The training addresses the topics planning, installation, supply, operation, and maintenance and also the financing of the systems.
2.2.1.2 Increase awareness of the population on the advantages and opportunities of solar energy	To increase awareness of the general public on the technology, each year (from Y2-Y5) in a different municipality of each beneficiary governorate 1 public event demonstrating the functionality and advantages of solar energy in rural areas will be organized.

Sub-Component 2.3: Enhancing Climate Resilience for Women

Output 2.3.1 A cadre of 150 Climate Wise Women (CWW) trained as change agents for climate adaptation

55. Women in rural areas are disproportionately affected by climate change with unequal access to resources and assets, barriers to decision-making and limited mobility. At the same time, women have the potential to become agents of change – leaders, practitioners, educators and influencers in climate change adaptation and mitigation. Empowering rural women as agents of change for climate adaptation has been identified in the literature as critical to addressing climate change challenges. Many countries have experimented with the concept and set up cadres of Climate Wise Women and provided them training and support. An international network of Climate Wise Women (WOCAN) established in 2004 has become a global initiative to promote women's leadership on climate change. The idea is growing in many countries which report that knowledge of local women, on the ground, is critical for fighting climate change and there has been considerable success with women-led community resilience groups in very diverse countries including Papua New Guinea, Uganda, Fiji, Nigeria, Maldives, Pakistan, Nepal, Indonesia, etc.[77] The GCF project proposes the creation of a cadre of young women as agents of change for climate adaptive practices from the rural areas in the three target Governorates of Muthanna, Najaf and Karbala. These young women will be advocates and repositories of knowledge and technical guidance and support on climate change adaptation, anchored in rural communities.

56. The women will be trained and certified through a customized sixteen-week training delivered over the course of a year in state-of-the-art techniques for climate adaptive agriculture, agri-business planning and development and use of social media for climate change adaptation and advocacy. The knowledge and expertise of the CWW will be developed further through monthly meetings with women agronomists from the Agricultural Extension Departments. The presence of these young women in the rural communities will bring practical knowledge and sustained support for climate adaptive agriculture to the doorstep and optimize, especially for women and youth, the benefits of project interventions. CWW agents will be able to leverage the expertise of the Agricultural Extension Officers and strengthen the linkage between farmers and the AEOs. At the national level, it will highlight women's role as change agents in Climate Change in Iraq and provide the government with informed, community-based interlocutors for mainstreaming gender in climate change.

57. These young women will perform a range of functions, supporting the behaviour change objectives of project interventions such as become (i) advocates and resource persons of climate adaptive agriculture for women and men farmers in their communities and graduates of Farmer Field Schools (ii) practitioners of climate adaptive agriculture, demonstrating the efficacy of climate adaptive techniques on their own farm (iii) facilitators of understanding and dialogue on climate change and modern climate adaptive agriculture among women (iv) field researchers on the impact of climate change on women (v) advocates for mainstreaming women and small-holder farmers perspectives and needs in national and governorate policies and plans through stakeholder dialogues with policy makers. The Climate Wise Women will also be engaged in field research designed by the International and National Climate Adaptation and Gender & Social Inclusion Specialists of the project and gather data on the roles of women in agriculture, their specific challenges and coping strategies in adapting to climate change and the lessons learnt from the CWW intervention.

Table 14 Climate Wise Women selection criteria

Selection criteria	Description
Minimum education	Minimum education – matriculate but preferably a graduate
Residence	Resident of a target village in Najaf, Karbala, Muthanna

Other[78]	Basic knowledge of farming
	Capacity to work in the field

Activities	Description
2.3.1.1 Technical Assistance for Climate Wise Women	Technical assistance will be procured for development of a short-course for training of climate wise-women as change agents.
2.3.1.2 Develop Social and Behaviour Change Communication Strategy (SBCC) for Climate Wise Women	A Social and Behaviour Change Communication Strategy will be developed for branding, positioning and specifying slogans and behaviour change products for CWW
2.3.1.3 Designing Training Modules for Master Trainers and Climate Wise Women	A service provider will be hired to conduct the training needs assessment and based on it training manuals will be designed for Master Trainers and Climate Wise Women.
2.3.1.4 Provide Training to Master Trainers	Master Trainers will be selected from pool nominated by Directorate of Agriculture and Centre of Training and Extension and trained
2.3.1.5 Select and train CWWs	Competitively selected candidates will be trained for a 12-week period in climate adaptation practices over the course of 18 months

Output 2.3.2 40,500 women adopt climate adaptive measures

58. The project will make arrangements to support and supervise the beneficiary women through the MoA extension staff and the use of a service provider. The service provider will assist the CWW to organize farm/homestead visits to demonstrate and train women farmers in their own villages. In addition, the CWW will conduct community dialogues to understand the impact of climate change on farming production from a gender perspective, disseminate information on climate resilient agriculture practices and demonstrate gender sensitive climate resilience measures. It is expected that each CWW will cover around four to six villages and conduct at least three dialogues in the adjoining villages with around 15 women in each session thereby covering around 40,500 women in the project Governorates over the life of the project. The cadre of the 150 climate wise women will be paid a stipend to support their activities and cover their costs. A survey will also be administered to identify the impact of climate change on farming households and its impact on women in particular. The results of this survey will be shared with key stakeholders at the national level such as the MOWR, DOWR, MoA, MOE and other decision-makers who regulate and allocate water use, etc. The service provider will also assist in organizing multi-stakeholder climate-wise women forums to highlight the role of women as change agents; identify achievements and challenges for climate adaptation at the community level for women, men, and youth; provide feedback to the Iraqi government on actions required at multiple levels to address climate change.

Activities	Description
2.3.2.1 Dissemination of climate resilient practices by CWW	The Climate Wise Women (CWW) will hold dialogues with groups of women in the communities to enhance their awareness about climate change and how best to cope with the risks associated with it and enhance their resilience.
2.3.2.2 Organizing 3 multi-stakeholder Climate Wise Women Forums	The Climate Wise Women Forums will be organized in Year 3, 4 and 5 of the projects. These events will serve to highlight the role of women as change agents; identify achievements and challenges for climate adaptation at the community level for women, men and youth; provide feedback to the Government of Iraq on actions required at multiple levels to address climate change.

Component 3: Scaling-up climate adaptation through policy formulation and planning

Outcome 3: Policy environment for efficient water and energy management is enabled

59. In the context of policy formulation for the water and energy sectors, two main options were considered: the scenario under which the project does not intervene and does nothing and the scenario under which the project helps the GoI refine its water allocation and energy sector policies. These two options are outlined in Table 83 in Annex 2 in the Options Analysis section. The project decided to intervene in this area because of the significant value added of refining the policy in these two very critical sectors for a paradigm shift, scalability and sustainability.

Sub-Component 3.1 Promotion of agriculture water policies and planning

Output 3.1.1 A climate resilient water allocation strategy and its action/legal/coordination plan developed

60. The policy framework necessary to mainstream climate change across sectors and to develop key transformative climate and environment related strategies is inadequate and constrained by lack of coordination and technical capacities among stakeholders. This has also been highlighted by the PSDS that points out the need to “develop and propose new policies and strategic plans targeting the priority sectors that support private business engagement” (Pillar II, Activity d). This component will

address the strategic and legal framework for water management to scale-up climate change adaptation into key national water policy frameworks and mainstreaming it across stakeholders (institutions, private sector, and civil society). The activities include a thorough problem analysis on all levels, from country, governorate, irrigation district to farm level, and develop best-fit solutions for the three areas of performance: water service delivery, organizational resources, and governance through both descriptive and analytical work. This will lead to the implementation of guidelines and their mainstreaming within the framework of the current project. The aim will be for the MoWR to be able to regulate according to a participatory and climate adaptive water allocation system leading to higher water use efficiency. The water allocation strategy will recognize that water availability will continue to decline due to an array of factors, such as climate change, an increase in water consumption, as well as the development of water infrastructures outside of Iraq. A new, transparent, and fully implemented water allocation framework and process as well as a consistently decentralized administration that strengthens local capacities are two central pillars in addressing existing deficiencies in the water governance structure. Water allocation needs to reflect and address the current, actual water needs and acknowledge de facto consumption patterns, while at the same time prioritizing among water users. This component will mobilize consulting services and complete the procurement and logistical preparations for consultation meetings and workshops. Local stakeholders such as the DOWR and MoA will also be involved where needed. Water allocation policies and implementation mechanisms can build on the ongoing work by FAO-RNE to develop guidelines for sustainable allocation of water and appropriate application tools.

Activities	Description
3.1.1.1 Conduct multi-stakeholder consultation meetings	This participatory consultation process will bring crosscutting sectors to take part in a whole government approach to foster climate adaptive water management practices to ensure the resilience of the agricultural sector without compromising the needs of the other sectors. The consultation process will address both aspects of policy coherence at horizontal and vertical levels related to water allocation within the framework of water-energy and food nexus.

Output 3.1.2. Improved national compliance practices for management of irrigation water supply

61. The farmers' and other water-users' perspectives are a key priority in the desired shift to a service-oriented culture. In line with one of the priority activities identified under pillar II of the PSDS to "fortify the private sector institutions and associations and the coverage of services to their membership", it is foreseen to collaboratively identify the underlying core problems and establish new service-delivery performance targets for water users and service providers. Functions and responsibilities need to be defined and assigned to different stakeholders. There is a need for agreement on general objectives for the reform and setting performance objectives. The project will undertake actions to organize visits (for government staff and WUA representatives) for knowledge exchange to learn from neighboring MENA countries and national experiences to best plan, manage and maintain irrigation water supply and drainage. Other forms of knowledge exchange encompass the organization of webinars to address the bottleneck (pinged during the consultation workshops) based on the neighboring countries' experiences (E.6).

Activities	Description
3.1.2.1 Analyse national compliance practices and the monitoring capacity.	The farmers' and other water-users' perspectives are a top priority in the desired shift to a service-oriented culture. The plan is to collaboratively identify the underlying core problems and establish new service-delivery performance targets for water users and service providers. Functions and responsibilities need to be defined and assigned to different actors. Agree on general objectives for the reform among actors and set performance objectives, and then define the functions needed to achieve these. Allocate responsibilities to the different actors
3.1.2.2 Conduct knowledge exchange processes	The project will undertake actions to organize visits (for government staff and WUA representatives) for knowledge exchange to learn from neighboring MENA countries and national experiences to best plan manage and maintain irrigation water supply and drainage. Other forms of knowledge exchange encompass the organisation of webinars to address the bottleneck (pinged during the consultation workshops) based on the neighboring countries' experiences.

Sub-Component 3.2. Support to solar energy policies implementation

Output 3.2.1 Enhanced planning for solar rural electrification

62. This output outlines the potential opportunity for assessing how a supportive policy framework can be put in place for upscaling opportunities for investment in low emissions energy options. This output will be implemented with close engagement with the Iraq Ministry of Electricity (IME) and is aligned with the priorities of the PSDS that aim among others to "initiate a public-private sector dialogue, whereby businesses are consulted by the Government before new policies and laws are drafted" and to have in place streamlined policies, laws, regulations and procedures that foster private sector development and to improve the quality of services provided by private sector institution and associations to businesses (Pillar II, Activity a[79], d[80]). The output further

addresses the provisions of the Integrated National Energy Strategy that assigns a key role for providing energy security in rural areas to solar energy, and focuses, with the involvement and consultation of private sector actors, on the elaboration of a road map for investments in the sector focusing on rural areas to support the country to achieve its target of a 20% share of RES within the next decade. Given that there is total length of water canals in Iraq of 27,000 km[81] and that approximately 24% of these are lined, there is a big potential to upscale the investments of Output 1.2.1. The project will hence develop a geospatial database with potential for investments of solar systems on water canals. At startup of the activities there will be further a review of the policy framework and strategies, needs, bottleneck and gaps in the sector with recommendation for improvement of the regulatory framework to accommodate the needs of the rural population. The elaboration of the plan will further involve the banking/private sector to develop opportunities for financing of RES with a particular focus on rural households in the target areas and the opportunity to utilize solar energy in off-grid, on grid and hybrid solutions, thereby transforming the sector in a direction that aligns with international best practice standards. The road map for rural electrification will contain clearly defined strategies and targets to be reached within the lifetime of the project and beyond.

Activities	Description
3.2.1.1 Develop a road map for solar rural electrification	In line with the provisions of the national energy plans, in particular, with the Integrated National Energy Strategy, that assigns to solar energy a key role for providing energy security in rural areas in short and medium term, the activity will focus on the elaboration of a road map for investments in the sector. The plan serves also to mobilize/leverage parts of the foreseen national investments from the private sector to achieve a 20% share of RES within the next decade. The plan contains clearly defined strategies and targets to be reached within the lifetime of the project and beyond, concerning market development, and anticipates learning curves of the different actors involved. Furthermore, an inventory of potential investments for the agricultural regions will be developed, together with a mapping and analysis for potential and sustainable exploitation. This analysis represents the basis for informed and sound decision making for public and private intervention. The road map contains the delineation of the policy framework, with a focus on rural households and the opportunity to utilize solar energy in off-grid, on grid and hybrid solutions, taking into consideration a development of the sector towards international best practice standards.

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

Accredited Entity (AE): FAO

63. FAO will serve as the Accredited Entity (AE) for the Project. FAO will be responsible for overall oversight of the Project, including: i) All project evaluation aspects; ii) Administrative, financial and technical supervision throughout implementation of the Project; iii) Supervision of effective management of funds to achieve the results and objectives; iv) Quality control of Project monitoring and reporting to the GCF; v) Project closure and evaluation. FAO as AE will ensure that the project is executed in compliance with GCF and FAO rules and regulations, policies and procedures, including relevant requirements on fiduciary, procurement, monitoring and evaluation, environment and social safeguards, and other project performance standards. FAO will assume these responsibilities in line with the detailed provisions listed in the Accreditation Master Agreement (AMA) between FAO and the GCF. As Accredited Entity (AE) of the Project, the FAO's supervision role will be attributed to the FAO Regional Office for the Near East and North Africa (RNE) in Cairo and relevant Offices and divisions at FAO headquarter (HQ), in Rome Italy, such as the FAO Office of Climate, Biodiversity, and Environment (OCB) and other technical divisions as required.

64. To perform the AE functions, FAO will set up a dedicated FAO-GCF Project Task Force (PTF), in line with FAO project cycle guidelines. The PTF will be comprised by relevant staff from the FAO Country Office in Iraq, RNE and HQ. The segregation of responsibilities within FAO will ensure that the Organization can independently and effectively perform the AE functions. The Project Task Force (PTF) will be established by FAO as a management and consultative body with a Formulator/Budget Holder (BH), a Lead Technical Officer (LTO) and a Funding Liaison Officer (FLO). The PTF will remain independent from the Executing Entity functions also performed by FAO (see Project execution section below). In line with the GCF policy on fees adopted through GCF Board Decision B.19/09, the above-mentioned segregation of responsibilities within FAO will ensure that the Organization can independently and effectively perform the AE functions listed in the GCF General principles and indicative list of eligible costs covered under GCF fees and project management costs.

Project Co-financing

65. The Government of Iraq, through the Ministry of Water Resources (MoWR) and Ministry of Environment (MoE) will provide co-financing in the form of a in kind contribution in the value of USD 2.33 million, and in form of in-kind contribution in the value of USD 0.47million to the project. The co-financier is responsible for reporting to the AE in accordance with the detailed provisions outlined in the GCF policies as well as AMA, Funded Activity Agreement (FAA) between FAO and GCF and the co-financing agreement signed between the co financier and FAO in its capacity of AE, on co-financing activities execution, and the disbursed and allocated co-financing amount. The co-financing agreement with the Government of Iraq (covering the co-financing from MoWR and MoE) will be part of the subsidiary agreement. The Government of Iraq, through the Ministry of Water Resources and Ministry of Environment will be responsible for executing and managing their co-financing funds under the coordination of the Project

Management Unit (PMU) and through the Project Steering Committee. FAO will provide co-financing in the form of a grant contribution in the value of USD 6.82million and in form of in-kind in the value of US$ 0.08million. Details are provided in Annex 4, co-financing letters can be found in Annex 13.

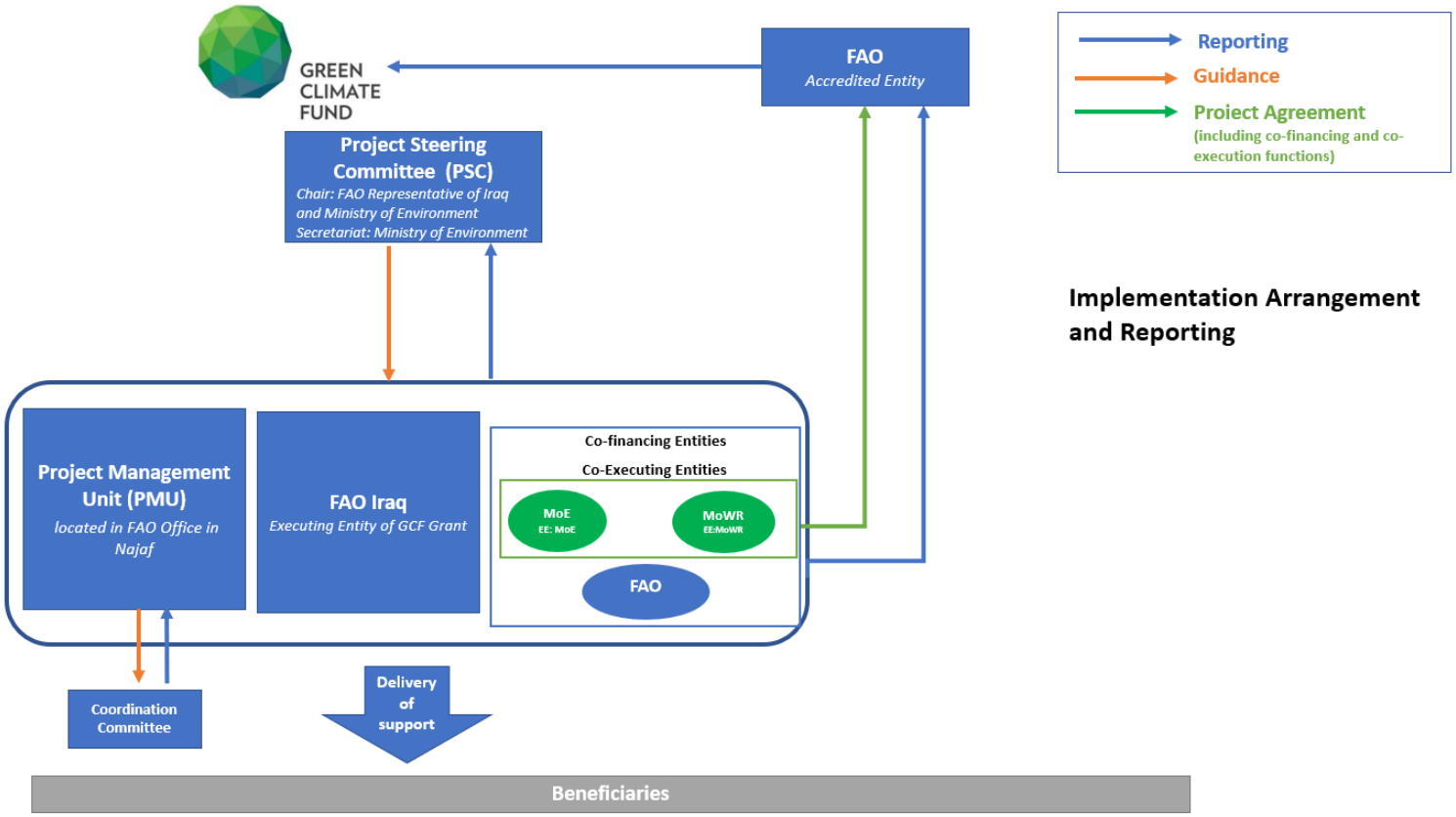
Other government Agencies involvement

66. In addition to the cofinancing provided by MoWR and MoE will also work in very close collaboration with other Government of Iraq line Ministries with the mandate to provide water, agriculture extension services and solar irrigation systems. The Ministry of Agriculture (MoA) and its affiliated Directorates in the field will assist with the facilitation of activities in the project Governorates. The project will work closely with the Iraq Ministry of Electricity (IME) on all activities related with energy policy and the development of the regulatory framework for RES. The IME will be expected to track and study the lessons generated by the project for wider application in the RES sector. The participation and contribution of the Ministries will help to build their ownership and sustainability of project investments.

67. The **Project Steering Committee** (PSC) will be established for the overall strategic guidance of the project and housed at the Ministry of Environment (MoE). The PSC will be co-chaired by the FAO Representative to Iraq and the MoE. The MoE as the National Designated Authority (NDA) for GCF in Iraq will notify the formation of the PSC and chair and convene regular six-monthly meetings to assess performance and issue appropriate guidance. The PSC will be composed of primary stakeholders such as the Ministry of Planning (MoP), Ministry of Finance (MoF), the Ministry of Water Resources (MoWR), the Ministry of Agriculture (MoA), the Iraq Ministry of Electricity (IME), and the Governors of Najaf, Karbala and Muthanna. The Steering Committee will meet on a bi-annual basis. The role of the PSC will be inter alia to: (i) Provide overall guidance and direction to the project, ensuring it remains within any specified constraints; (ii) Ensure that co-financing support is provided in a timely and effective manner and report against its availability and use; (iii) Address project issues as raised by the PMU and/or PSC members or EEs; (iv) Monitor project risks and the effectiveness of mitigation measures, and provide guidance on new project risks, and agree on possible countermeasures and management actions to address specific risks; (v) Review the project progress, and provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily and within the approved project framework; (vi) Review and clear the Annual Work Plan and Budget (AWPB) to be sent to FAO, and provide necessary strategic guidance for its execution; (vii) Agree on the annual project implementation report; and (viii) Make recommendations for subsequent work plans to build on achievements and address any shortcomings. PMU will act as the Secretariat of the PSC. The Project Coordinator of the PMU will act as Rapporteur to the PSC that should ensure through its overall leading and central role a strong country ownership.

68. In addition, the project will also establish a Coordination Committee which will include key experts from the Ministry of Environment, MoA and will have the following responsibilities: facilitate coordination between Project Management Unit (PMU) and the project stakeholders (partners and beneficiaries within the target governorates); ensure alignment with national climate change adaptation strategies and priorities; coordinate and bring together the different actors and partners implementing climate change adaptation projects in the country to ensure complementarities; ensure that the project activities have no negative environmental and social impacts; and coordinate all activities relevant to policy dialogue and to regional and local adaptation plans and strategies. The TORs of this committee will be formulated by FAO-Iraq and validated by the PSC.

Figure 6 Implementation Arrangements



Nationally Designated Authority

69. The MoE in its capacity as the NDA and as the lead agency responsible for environmental aspects will use its convening position to facilitate consultations at the national level as well as assist in conducting knowledge exchange processes for scaling up the innovations and investments, enhancing impact and introducing a paradigm shift in the management, allocation and use of scarce water resources and improved adaptation to climate risks and efficient use of renewable sources of energy. Where appropriate, the Iraqi National Centre for Climate Change (NCCC) and the Permanent National Committee for Climate Change (PNCCC) will engage other Iraqi ministries involved in climate change adaptation and mitigation, municipalities, local Government, research institutions and Civil Society Organizations (CSOs) to coordinate with stakeholders and raise national awareness.

Executing Entities

70. FAO, through its Representation in Iraq (FAO-Iraq), will be the Executing Entity of the GCF funds and its own co-financing. The Ministry of Water Resources (MoWR) and Ministry of Environment (MoE) will be the Executing Entities of their own co-financing. FAO-Iraq will establish a dedicated Project management Unit (PMU) to be in charge of the execution of the project as a whole. The project will work with 4 Ministries (Environment, Water resources, Agriculture and Electricity). None of the involved ministries will receive budget from the project, but the MoWR and the MoE will also be Executing Entities to implement their own in-kind co-financing. As such, FAO will sign with the GoI a subsidiary agreement which will detail the roles and responsibilities of the Host Country, acting through MoWR and MoE, as co-financiers and Executing Entities. FAO will also sign contractual agreements with service providers identified for the project in accordance with FAO procurement procedures. As each ministry will focus on activities specific to their field of intervention, roles and responsibilities are clearly defined by the legal framework of the country. There is therefore only a low risk of multi-ministerial conflicts, which is further mitigated by the Steering committee that will guarantee coordination and synergies among participating partners to the project results delivery. FAO will either undertake direct responsibility for execution of the selected activities under the various components through technical experts in the PMU or competitively procure the services of implementing partners. Table 15 gives the responsibility for the achievement of the main project outputs.

71. To perform its Executing Entity functions, FAO will set up a Project Management Unit (PMU), in Najaf which is one of the project Governorates. The PMU will be under the direct responsibility of FAO, through its Representation in (FAO-Iraq) and will be led by a Project Coordinator/Irrigation Specialist. The PMU will be supported by technical experts assigned to each technical intervention for support and oversight. The PMU will include international and national specialists directly recruited by FAO-Iraq on a full time or part-time basis.

Table 15 Key Responsibilities and participating partners to the project

Agency	Role	Key Responsibility
FAO	AE	Supervision & Oversight
FAO Representation in Iraq (FAO-Iraq)	EE	Execution of project activities
Ministry of Environment (MoE) Climate Centre (part of MoE)	NDA	Facilitation & policy support
Ministry of Water Resources (MoWR), Directorate of Water Resources (part of MoWR)	Co-Financier and EE	in-kind contribution and delivery of technical activities Coordination and support in the field
Ministry of Environment (MoE) Department of International Relations (part of MoE)	Co-Financier and EE	In-kind contribution and project management support Coordination and support in the field
Ministry of Agriculture (MoA), Directorate of Agriculture (part of MoA)	Key stakeholder	Coordination and support in the field
Iraq Ministry of Electricity	Policy Change	Facilitation Support and Policy Review
Service Provider	Implementation	Implement irrigation and energy projects
Service Provider/NGO	Implementation	Implement the Climate Wise Women

Table 16 Executing entities of the different activities

Component	Activity	Executing Entity	Funding Source
Component 1	Activity 1.1.1.1	FAO	GCF
	Activity 1.1.1.2	FAO	GCF
	Activity 1.1.1.3	FAO	GCF
	Activity 1.1.1.4	MoWR	MoWR
	Activity 1.1.1.5[2]	MoWR	MoWR
		FAO	GCF
			FAO
	Activity 1.2.1.1	FAO	GCF
			FAO
	Activity 1.2.1.2	FAO	GCF
			FAO
	Activity 1.2.1.3	FAO	GCF
			FAO
	Activity 1.2.1.4	MoWR	MoWR
	Activity 1.3.1.1	FAO	GCF
	Activity 1.3.1.2	FAO	GCF
	Activity 1.3.2.1[3]	MoWR	MoWR
		FAO	GCF
	Activity 1.3.2.2.	FAO	GCF
Component 2	Activity 2.1.1.1	FAO	GCF
			FAO
	Activity 2.1.1.2	FAO	FAO
	Activity 2.1.1.3	FAO	FAO
	Activity 2.1.1.4	FAO	FAO
	Activity 2.1.2.1	FAO	GCF
			FAO
	Activity 2.1.2.2	FAO	GCF
			FAO
	Activity 2.1.3.1	FAO	GCF
			FAO
	Activity 2.2.1.1	FAO	FAO
	Activity 2.2.1.2	FAO	GCF
			FAO
	Activity 2.3.1.1	FAO	GCF
			FAO
	Activity 2.3.1.2	FAO	FAO
	Activity 2.3.1.3	FAO	FAO
	Activity 2.3.1.4	FAO	FAO
	Activity 2.3.1.5	FAO	GCF
			FAO
	Activity 2.3.2.1	FAO	GCF

[2] MoWR will execute MoWR co-financed sub activity and FAO will execute GCF funded sub activities.
[3] MoWR will execute MoWR co-financed sub activity and FAO will execute GCF funded sub activities.

			FAO
	Activity 2.3.2.2	FAO	GCF
			FAO
Component 3	Activity 3.1.1.1	FAO	GCF
			FAO
	Activity 3.1.2.1	FAO	FAO
	Activity 3.1.2.2	FAO	GCF
			FAO
	Activity 3.2.1.1	FAO	FAO

72. The Ministry of Water Resources (MoWR) has been closely involved in the design of the project and will support in coordinating activities associated with components 1 and 3, which includes the conversion of open canals to closed canals, the installation of solar panels on selected canals, and the strengthening of Water User Associations, technical capacity of the field staff and policy review. The PMU in association with the MoWR will coordinate activities with respect to the investments in the irrigation systems with the Department of Water Resources at the Governorate level. Under the project, the selection of design and contracting companies will be undertaken through a competitive process in which both the public and private companies will be invited to bid for implementation of the construction works using the FAO bidding and procurement procedures. The MoWR will also be involved with the policy for improving the system of water allocation in discussion with key stakeholders together with facilitation support from the MoE. The MoWR will be responsible for the operation and maintenance of all investments after commissioning the rehabilitated systems and of the solar installations. The PMU will hire technical specialists to strengthen the capacity of Water User Associations (WUA) to assist in the operation and management of the irrigation systems and the WUAs will also be involved in the training related to solar systems. The lessons from the experience will be documented and shared with key stakeholders including the private sector entities investing in solar energy in the country, in line with one of the priority activities of the PSDS to “build capacity in the Government and the private sector on the best use of information when planning, executing, tracking and reporting on progress.” (Pillar I, Activity d).

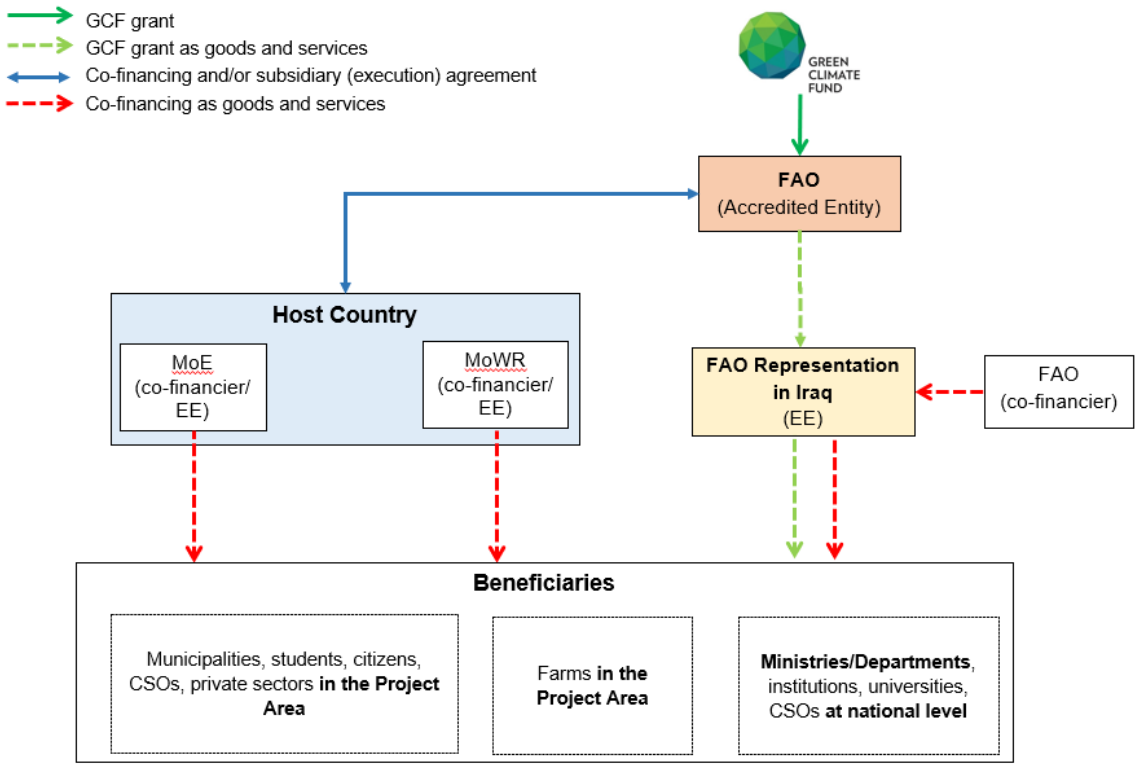
73. Based on agreed selection criteria, the Ministry of Agriculture will identify – among its own staff - the extension service officers who will receive the training. The Department of Agriculture will identify the FFS Facilitators from the extension staff who will be trained by the Master Trainers. MoA will assist the PMU in organizing farmers to participate in the Farmer Field Schools (FFS) in the project areas, for which FAO-Iraq will provide the technical course materials and supplies. FAO-Iraq will work closely with the national and regional research stations to identify a menu of suitable climate adaptive and resilient practices and technologies for the project area.[82] The Department of Agriculture at Governorate level will assist in organizing FFS field days. This activity will include collaboration with the private sector, agriculture research stations and technical experts to demonstrate climate resilient practices and technologies to a wider audience.

74. The sub-component on Climate Wise Women (CWW) will be executed, under FAO supervision, by a service provider (NGO) with qualified technical specialists for designing and delivering the training of Master Trainers and Climate Wise Women, also designing a communication campaign to launch the CWW. The NGO will work closely with MoA and ensure that at least 50 percent of the trainers are officers from the MoA and invite experts from the MoA for their inputs in the process of developing the training for the Master Trainers. The service provider will undertake the following tasks; (i) design and deliver a course for Master Trainers; (ii) identify a team of potential Climate Wise Women from the selected Governorates; (iii) organize training of the selected cadre of CWW; (iv) facilitate in the deployment and support of the climate wise women; (v) monitor the performance of the CWW and (vi) identify innovative opportunities for their continued deployment at the end of the project and (vii) organize CWW forums with CWWs representatives from each Governorate for a stakeholder dialogue (viii) prepare a final report on the experience and lessons learnt from the experience. Activities, list of beneficiaries and training curricula will be reviewed and validated by FAO-Iraq.

75. The Funds from GCF will be transferred to FAO as a grant. No funds will flow directly to the GoI. Each Iraqi EE will execute activities under its responsibility with its own funding (co-financing). There will be no transfer of funds from the GCF or FAO to the EEs.

Figure 7 Flow of Funds

Fund flows



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

76. GCF funding is required for the project due to the extreme financial constraints that the country faces. The Iraqi economy is highly dependent on oil, which accounted for over 96 percent of the country's exports, 92 percent of government budget revenues, and 43 percent of its gross domestic product (GDP) in 2019. The Iraqi economy has been confronted with a persistent decline in oil prices which it experienced in 2015 and 2016 and more recently in 2020. In addition, the armed conflict, the influx of refugees from Syria, the needs of internally displaced persons and the negative impact of the COVID-19 pandemic has led to further pressure on the economy which has been suffering for decades due to the security and political challenges. Growth has been weighed down by depressed global oil demand and adherence to OPEC+ production cut agreements which led to a 17.6% contraction in oil GDP in 2020. The non-oil economy also underwent a 9% contraction as the COVID-19 induced lockdown impacted domestic demand with religious tourism and service sectors suffering the most. GDP growth in Iraq was projected to recover slowly by the double shock of sinking oil prices and pandemic to rise to 1.9% in 2021 and 6.3% on average over the subsequent two years[83]. The current Russo-Ukrainian war has significant implications on the economic and food security situation of the country. Russi"s invasion of Ukraine has caused shortages of food in Iraq and forced the government to pay more in gasoline subsidies. While increasing oil prices may mitigate the situation to some extent, they will probably not outweigh the costs due to rising global prices. Iraq in fact imports 50% of its food supply and the Government was forced to provide a monthly allowance of USD 70 for vulnerable citizens and to subsidize wheat and cooking oil to cushion the doubling of the prices in March 2022.[84]

77. The annual budget of the public sector has severely contracted due to the fiscal crisis. Humanitarian aid and support for social and economic recovery have been the priorities for national and international funding for Iraq (GoN, 2018). The country has received only modest funding from international agencies and its environmental challenges and needs for adaptation to climate change have remained largely underfunded. Iraq does not have access to the low cost, long term limited-recourse project debt[85] widely available for GCC and other MENA countries as most global financers and lenders are unfamiliar with Iraq and its infrastructure investment environment. Furthermore, Iraq's credit rating stands at Caa1[86] (Moody's), one notch above 'default', compared to the investment grade of the GCC states [Istepanian, 2020]. Even when the government is willing to develop large scale solar parks, the Request for Information (RFI) put forward for developing the first round has failed to attract global players and financers in renewable energy despite more than 40 local and foreign companies having been shortlisted as qualified bidders. The planned investment in large scale innovative renewable energy solutions that would enhance market penetration of the technology did therefore so far not occur, and further additional efforts need to be carried out to speed up the process Iraq has

identified private sector engagement as key to delivering on its climate future. This is explicitly expressed in Iraq's Private Sector Development Strategy (2013-2030).

78. Iraq's initial National Communication document prioritizes sectors with the highest potential, namely agriculture, energy, water and industry. Iraq needs urgent investment in the agricultural sector due to its contribution to GDP and employment which accounts for 18% of those employed.[87] The sector has been stressed due to climate change and the reduced water availability from the available surface resources (Tigris and Euphrates). Climate change impacts the water sector, in turn impacting the agriculture sector, which consumes 85% of the water in the country [Lucani, 2012]. Increasing temperature, droughts and erratic precipitation patterns together with increasing evaporation are causing water stress in Iraq in both rainfed and irrigated areas. Droughts and reduced water availability are increasing the loss of arable land, adding greater pressure and resulting in distress for the rural population already suffering from social unrest. By focusing on adaptation technologies within agriculture and water sectors, this proposal aligns with the on-going adaptation work in Iraq, especially around climate-resilient agriculture investments and restoring agriculture and water systems that support smallholder farming families to diversify incomes, increase resilience, and enhance food security [Istepanian, 2020].

79. Based on a study by the MoWR, Iraq must direct a significantly higher percentage of its budget to water resources and infrastructure investments in order to enhance sustainable natural resource management. The development of projects using new irrigation technologies and promoting climate adaptive practices would require more than $132 billion from now until 2035. This amount only constitutes the additional needs for climate adaptation.[88] It does not include the cost of reconstruction and rehabilitation of existing infrastructures that have been severely damaged during the past years of conflict. GCF assistance will enable the country to meet the goals of its existing environment and industrial development strategies, such as the NDC sectoral analysis plans for mitigation sectors, National Environmental Strategy and Action Plan (2013-2017) and National Development Plan (2018-2022). The investment may stimulate private interest in the energy and irrigation sectors. Green energy, like solar can make a significant contribution to reducing the share of imported energy, buffering oil exports, and reducing the public subsidy burden. Without GCF involvement to address this funding gap, the government will not be able to take adequate steps to invest in climate change adaptation of the agriculture and water sectors and will not be able to facilitate the type of profound paradigm shift that would entail a shift from flooded irrigation systems to the more efficient piped irrigation systems.

80. The grant from GCF will be used to make investments in public irrigation infrastructure as well as to enhance the adaptation capacity of poor and food insecure households, whose capacity to transform their agriculture practices is currently limited. The formal financial sector is reluctant to lend to the agriculture sector because of the risks associated with the sector which are growing with climate change. Smallholder's access to finance is even more limited due to their lack of collateral and resources to under write their credit risk. Private sector is reluctant to invest in the sector because of the high risks associated with a production system dominated by small producers who are unable to address the growing risks compounded by climate factors. A GCF grant is justified given the vulnerable nature of the small rural producers in Iraq to climate change and extreme events. Most of the targeted households are food insecure households that are already suffering the adverse impacts of climate change, with at least 11% female-headed households. Similarly, farming households' changing to more efficient water management practices and resilient crop production methods and technologies is expected to bring about a permanent transformation in their production systems and crop choices. The focus of the project, creating a cadre of climate wise women, is well aligned with the GCF understanding that women are the hardest hit by shifts in climatic conditions and that women tend to rely more on natural resources for their livelihood and that declines in land and biomass productivity affects women more than men, especially in rural areas. SRVALI has been designed around this fact, and thus mainstreams gender perspectives and integrates gender responsive actions in each of its components.

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

81. The exit strategy and sustainability of each of the main investment areas has been woven into the design of each component. The investments that the project will make in infrastructure will be undertaken in close coordination with the Ministries and Departments responsible for their long-term operation and maintenance at the `governorate level. Thus, all investments in the irrigation infrastructure at the primary and secondary canal level and in solar systems for the operation of water pumps have been planned in close collaboration with the Ministry of Water Resources (MoWR) at the national level and the Department of Water Resources at the Governorate level with a firm commitment from them to continue to operate and maintain them after completion at their own cost. At the farm level, the inclusion of Water User Associations is designed to facilitate the regulation and efficient use of water after the rehabilitation of the schemes. The responsibilities for operation and maintenance of the irrigation and drainage infrastructure would be transferred gradually to the WUAs. Arrangements, such as a scheme management code and training will be put in place between the responsible Government irrigation structure (DoWR) and the WUAs. At start up, FAO will develop a manual that will elaborate on and guide all the involved parties on the roles and responsibilities for O&M of the various investments. The DoWR in each Governorate will handle the operation and maintenance of all investments after commissioning of the rehabilitated systems. O&M Cost will be taken over by the Government, this has also been budgeted accordingly. The DoWR will continue managing main canals while the responsibilities for operation and maintenance of the irrigation and drainage infrastructure of tertiary canals would be transferred gradually to the WUAs. Water User Associations will be involved through the complete process in the selected Governorates for the operation and management of the improved systems. Arrangements, such as a scheme management code and training, will need to be put in place between the responsible Government irrigation structure (DoWR) and the WUAs. The rehabilitation (upgrade) will also include a review of the water allocation modalities for the targeted

schemes (Annex 2, par. 440). The rehabilitation (upgrade) will also include a review of the water allocation modalities for the targeted schemes for enhanced sustainability. In a similar way, responsibilities for the operation and maintenance of the solar systems on the water canals are first taken over by the DOWR that will then gradually transfer these responsibilities to WUAs. The project is also introducing for the first time the idea of cost recovery through the installation of a system of prepaid water meters at each individual outlet. The WUAs are expected to implement this idea as a more cost-effective and reliable system for ensuring adequate supply of water and for improved water governance and efficient use. At the national level, the project will support the preparation of an appropriate legal framework for irrigation management by the WUAs within the framework of the existing Water Code.

82. The participation of the private sector will be guided by the objectives and targets of the Private Sector Development Strategy (2014-2030) and will implement the recommendations to (i) make available to the Government and private sector, accurate information on the formal and informal private sector, for strategic planning and decision making purposes (Pillar I, Activity a[89], b[90], d[91]); and (ii) To have in place streamlined policies, laws, regulations and procedures that foster private sector development and to improve the quality of services provided by private sector institution and associations to businesses (Pillar II, Activity a[92], d[93], g[94]). Private sector operators will be involved across components (e.g. Output 2.1.1, Output 3.1.1, Output 3.2.1.) including: (a) field farming schools and trainings to show case the potential of introduced technologies and practices and the importance of supplying specific inputs, and (b) via the local forums and networks that the project will establish as well as in all actions related to policy development. The project expects to play an important role in demonstrating the role of local stakeholders in the improvement of water and energy infrastructure management and its governance at the local level. The role of WUAs in the process is critical to show case their role in developing a sustainable model for management of RES investments at the local level. The project will capitalize on this opportunity for regulatory reform in low emissions pathways for the country by helping to demonstrate how strengthening institutions at the local level such as WUAs can benefit from revenues generated through selling excess power into the national grid and at the same time regulating efficient water use and governance. The project will facilitate collaboration between the IME and the MoWR to showcase the solar systems installed on open canals to upscale this model through private investments and achieve as co-benefits efficient land use and the benefits of water savings among others. With respect to its investments in solar energy, the SRVALI project expects that the model being demonstrated will be scaled up in partnership between the public and private sectors. The project will capitalize on Government plans announced in 2021[95] to install 10 GW of PV systems by 2030 contributing to a share of 20 percent RES. The project would capitalize on these plans and propose the solar systems on water canals as a promising area of investment in solar energy for rural electrification. These investments will be sustained through contractual arrangements being established by the Government between the private builders and the IME.

83. During implementation of the project, discussions will be held with Government on how to institutionalize the FFS and create linkages of extension agents with CWW. This will help the government continue the project efforts for climate change awareness and adoption of key climate smart technologies and practices on a continuing basis through its system of extension in the public sector. The inclusion of the private sector agents will also be encouraged in the FFS process to build their capacity for better under-standing climate risks, building stronger linkages with the farming communities and continuing to spread awareness about improved adaptation practices and technologies. The cadre of climate wise women will be sustained during the project period and undertake the activities expected from them as the project will cover their costs and identify those women who are active in their communities and highly motivated individuals with a desire to serve their communities. The project will build linkages of CWW with the public sector extension agents to enable them to continue to be engaged at the end of the project. However, their activities beyond the project period are not always expected to be sustained without support but it is expected that the capacity and confidence that the project has built for the women will lead them to find other productive opportunities for employment and serving their communities and will inspire other women as role models.

C. FINANCING INFORMATION

C.1. Total financing

(a) Requested GCF funding (i + ii + iii + iv + v + vi + vii)	Total amount	Currency
	29.25	million USD ($)million USD ($)

GCF financial instrument	Amount	Tenor	Grace period	Pricing
(i) Senior loans	Enter amount	Enter years	Enter years	Enter %
(ii) Subordinated loans	Enter amount	Enter years	Enter years	Enter %

(iii) Equity	Enter amount			Enter % equity return
(iv) Guarantees	Enter amount	Enter years		
(v) Reimbursable grants	Enter amount			
(vi) Grants	29.25			
(vii) Results-based payments	Enter amount			

(b) Co-financing information	**Total amount**	**Currency**
	9.7	million USD ($)

Name of institution	Financial instrument	Amount	Currency	Tenor & grace	Pricing	Seniority
GoI (MoWR)	In kind	2.33	million USD ($)million USD ($)	Enter years Enter years	Enter%	Options
GoI (MoE)	In kind	0.47	million USD ($)million USD ($)	Enter years Enter years	Enter%	Options
FAO	Grant	6.82	million USD ($)million USD ($)	Enter years Enter years	Enter%	Options
FAO	In kind	0.08	million USD ($)			

Total financing (c) = (a)+(b)	**Amount**	**Currency**
	38.95	Million USD

(d) Other financing arrangements and contributions (max. 250 words, approximately 0.5 page)	84. The Government will be providing use of its staff and facilities for the implementation of project activities as well as budget support for operating and maintenance of infrastructure from its annual budget allocated in the Water Investment Plan. The Government will also exempt all purchased goods and services, even those directly imported such as vehicles and equipment from taxation for the project.

C.2. Financing by component

85. Total project costs are estimated at USD 38.95 million. The total comprises a GCF grant of USD 29.25 million (75% of total project cost) FAO grant of USD 6.82 million and FAO in-kind USD 0.08 million (18%), and Government of Iraq contribution of USD 2.8 million (7 %).

86. The following table illustrates Project costs by output and financer:

Table 17 Summarized cost estimates per component and output

Component	Output	Indicative cost	GCF financing		Co-financing		
		USD	Amount	Financial Instrument	Amount	Financial Instrument	Name of Institutions
			USD		USD		
COMPONENT 1:	Output 1.1.1.[96]	22,633,870	21,296,470	Grants	840,000	Grants	MoWR
					324,000	Grants	MoWR
					173,400	Grants	FAO
	Output 1.2.1.[97]	2,103,000	715,750	Grants	58,000	Grants	MoWR
					1,329,250	Grants	FAO
	Output 1.3.1.	456,000	456,000	Grants			
	Output 1.3.2.	1,860,000	750,000	Grants	1,110,000	Grants	MoWR
COMPONENT 2:	Output 2.1.1.	1,525,984	406,406	Grants	1,119,578	Grants	FAO
	Output 2.1.2.	3,320,776	1,895,588	Grants	1,425,188	Grants	FAO
	Output 2.1.3.	229,000	112,000	Grants	117,000	Grants	FAO
	Output 2.2.1.	179,794	24,500	Grants	155,294	Grants	FAO
	Output 2.3.1.	1,270,326	411,616	Grants	858,710	Grants	FAO
	Output 2.3.2.	502,050	263,475	Grants	238,575	Grants	FAO

COMPONENT 3:	Output 3.1.1.	750,400	377,000	Grants	373,400	Grants	FAO
	Output 3.1.2.	392,000	0	Grants	392,000	Grants	FAO
	Output 3.2.1.	137,242			137,242	Grants	FAO
Monitoring and Evaluation		1,005,176	776,736	Grants	228,440	Grants	FAO
Project Management Costs	**Consultants, Equipment, Trainings Workshops, Contracts and Others**	1,734,382	914,459	Grants	468,000	In-kind	MOE
					272,123	Grants	FAO
					79,800	In-kind	FAO
Contingency		852,000	852,000	Grants			
Indicative total cost (USD)		38,952,000	29,252,000		9,700,000		

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

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

87. The total GCF financing for capacity building and technology transfer is estimated at USD 23.434.339 or 78% of the total GCF funding. The key technology transfer aspects to be promoted include the shift from open to cover of irrigation canals (USD 16.34 million). Capacity building financed by GCF (USD 4.96 million) includes supporting Ministry of Water Resources and Ministry of Agriculture to develop activities in Components 1 and 2. The Table below identifies the volume of financing in each component that is allocated for capacity building and technology transfer from the total budget and GCF.

Table 18 Financing for Capacity Building and Technology Transfer

	Total Cost					**GCF Financing**				
	Total Amount (USD)	**Capacity Building (USD)**	**%**	**Technology Transfer (USD)**	**%**	**Total Amount (USD)**	**Capacity Building (USD)**	**%**	**Technology Transfer (USD)**	**%**
Component 1	$ 27,052,870	$ 3,351,158	12	$ 16,337,760	60	$ 23,218,220	$ 2,853,758	12	$ 16,337,760	70
Component 2	$ 7,027,930	$ 2,702,994	38	$ 4,051,826	58	$ 3,113,585	$ 818,022	26	$ 2,271,063	73
Component 3	$ 1,279,642	$ 1,279,642	100	$ -	-	$ 377,000	$ 377,000	100	$ -	-
MnE	$ 1,005,176					$ 776,736				
PMC	$ 1,734,382	$ -	-	$ -	-	$ 914,459	$ -	-	$ -	-
Contingency	$ 852,000					$ 852,000				
Total	$ 38,952,000	$ 7,333,794	19	$ 20,389,586	52	$ 29,252,000	$ 4,048,780	14	$ 18,608,823	64
Total GCF Capacity Building and TT						**USD 22,657,503**				

D. EXPECTED PERFORMANCE AGAINST INVESTMENT CRITERIA

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

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

88. The project will contribute to a number of GCF targets identified in the strategic program 2024-2027 as indicated in Table 19.

Table 19 Main contribution of the Project to the GCF Updated Strategic Program 2024-2027

USP target	USP 2024-27 targets	Main projects contribution
4. Food	190 to 280 million beneficiaries adopting low-emission climate-resilient agricultural and fisheries practices, securing livelihoods while reconfiguring food systems.	22,536 tCO_{2eq} expected mitigation outcome and -1,321,618 tCO_{2eq} as expected mitigation co-benefit; 1,958,134 Individuals with increased resilience (women 971,909)
5. Ecosystems	120 to 190 million hectares of terrestrial and marine areas conserved, restored or brought under sustainable management.	121,965 hectares of farming area will be brought under climate-resilient management practices
6. Infrastructure	45 to 60 developing countries supported by GCF to develop or secure low-emission climate resilient infrastructure, through systemic and/or country-driven resilience planning, funding and/or de-risking of investments, including those that draw on nature-based solutions or ecosystem-based approaches.	68 km of irrigation canals will be rehabilitated in a climate resilient manner
7. Clean Energy	20 to 30 developing countries supported to expand access to sustainable, affordable, resilient, reliable renewable energy, particularly for hardest to reach, and/or to increase renewable energy sources in the energy mix.	Installation of solar systems on water canals will improve the energy and water security of at least 446 Households. Target governorates will benefit from enhanced rural planning related to solar energy, increasing energy security of the beneficiaries and providing possibilities for rural economic development and income opportunities in particular for the younger generation.
10. Innovative climate solutions, business models and technologies	900 to 1500 local private sector early-stage ventures and MSMEs provided with broad-based seed and early-stage capital for innovative climate solutions, business models and technologies, with a focus on adaptation, energy access and transport sectors, and removing barriers for home-grown innovation	Solutions and technologies transferred to technical institutes and vocational school, over 530 professionals trained. Development of special training modules for the private sector, SMEs and startups will be considered. The business development capacity of 400 extensionists and 10,000 farmers will be enhanced. Private sector involved in the development of a roadmap for solar rural electrification.

89. The project is designed to enhance climate resilience of vulnerable agriculture households in Iraq's rural communities in Karbala, Najaf and Muthanna with a strong gender focus. It is expected that the project will contribute to a paradigm shift towards climate resilient sustainable development and investment in Iraq through improving the water distribution systems, stabilizing and increasing water availability at the farm level; increasing crop water productivity; transforming the existing irrigation network into more energy efficient systems, strengthening of water management institutions and the water distribution regime; reducing the adaptation deficit of farming communities via specific and tailored training and capacity development. To reduce the adverse climate impacts on farmers, the project will address water needs and other barriers at farm level, combining investments in improved irrigation systems and on-farm practices to ensure a shift from a rigid and unsustainable water management framework to an improved system that is more water efficient and responds to farmer needs and capacities.

90. Overall, the project is expected to reach 1,958,134 people (1,044,800 beneficiaries directly and 913,334 indirectly during the six-year project overall in the country (Core Indicator 2). The project will benefit 971,909 women (517,994 directly and 453,915 indirectly).[98] In addition, the project will target women headed households who make up between 11% and 12% of the households in the project area [WFP, 2016]. Tables 1, 2 and 3 in Annex 23 provide details of beneficiaries' calculations. The project will also reach out to 100,000 farmers using information communication technology to disseminate information on weather, climate related hazards and dissemination of practices and technologies which are climate resilient and improve land use planning and management (Table 6, Annex 23). In addition, around 700,000 people from the farming households are expected to benefit indirectly because of the national level investments in enabling policy environment for regulation of a more appropriate water allocation policy. Finally, it is important to highlight that the activities included in component 3, working with government institutions for planning and designing policies and strategies, contribute to creating an enabling environment for climate adaptation. Once such policies are adopted and implemented, which could be beyond the scope and implementation timeline of the project, this could translate into adaptation benefits for the population. Finally, **the project will have an additional impact in terms of promoting climate change adaptation and resilience building** via scaling and replicating the farmer field schools. The project will transfer technologies and knowledge to both extensionists and farmers. By doing so and by constantly monitoring the execution of FFS and ICT4CC activities, the project will provide immediate support to 10,000 farmers while enabling the state via its extension service officer to replicate and

scaling up to other farmers in both project areas and the country. This approach will allow to expand and replicate project impacts beyond project areas and across communities.

91. The project is designed to ensure benefits to all target groups and peoples that will be impacted by project activities. It is considered unlikely that the target governorates host Indigenous Peoples; however, before implementing field level activities, the presence of Indigenous Peoples will be confirmed. Following this, should it be found that Indigenous Peoples are affected, the process of Free, Prior and Informed Consent and the indigenous Peoples Plan will be applied while the Indigenous Peoples leaders will be included in discussions related to project activities. The project aims to empower rural women in the three target Governorates through giving them visibility as farmers and water users, including their 'voice' in all the consultations, increasing their knowledge and skills in climate resilient practices, providing opportunities for decision-making and leadership. The Gender Action Plan of the project ensures that nearly 50 percent of all direct and indirect beneficiaries are women and aims to have a transformative impact on women's role in climate change through their increased visibility and active engagement in water management and leadership roles in climate resilient agricultural interventions.

92. **The project will have an impact in terms of reducing** GHG emissions (Core Indicator 1). Solar-powered irrigation systems (SPIS) have a significant impact on the reduction of GHG emissions. The project is expected to transfer the positive experience of several countries[99] using solar panels which are installed on irrigation canals. Given that the country is committed to switching to the use of cleaner energy, the installation of solar panels on canals will serve the dual objective of providing reliable energy to farmers and avoiding CO_2 emissions. The renewable energy generated is intended to satisfy the needs of the agriculture sector, being a reliable source of energy for pumping of irrigation water in remote areas, where supply of electricity from the grid is not guaranteed, and diesel is often being used with generators. This will ensure clean energy availability and enable farmers to get access to advanced irrigation technologies that will increase productivity without increasing water consumption to provide a more efficient and sustainable system and reduce costs. GHG emissions will be avoided due to the (a) reduction in energy through reduced water pumping needs; (b) installation and use of solar panels on irrigation canals (c) introduction of climate resilient practices such as minimum soil disturbance; (d) change from low carbon input to high carbon input and other good agricultural practices. It is estimated that at least -1,344,154 tonnes of CO_2eq will be avoided over 20 Years lifetime of the project. Results, among others via Ex-Act suggest an annual emission avoidance of about 1,127 CO_2 equivalent per year from the rehabilitation of the irrigation network and the installation of solar systems on water canals (Y6 – 22,536). A further 66,081 tonnes of CO_2 equivalent per year (Y6 **-369.485)** is expected to be reached as co-benefits from the CRA capacity development activities in Component 2**.** The carbon intensity for crop production is expected to decrease from 1.64 to 0.77 tCO_2 eq. / t crop in the areas applying climate smart practices. In particular, the measures implemented for the mitigation of GhG emissions in the rice sector that foresee an improved irrigation of the paddies and utilization of straw after the harvest, are expected to achieve with -789,530 tCO_2 eq. over the period of 20 years significant reduction. The lessons learned of these activities are especially important to scale up mitigation action in the governorate of Najaf responsible for 36% of national rice production and other important areas of cultivation in the country (See Annex 22).

93. Considering all investment costs of the project and direct mitigation impact and mitigation co-benefits, the cost per tonne of avoided CO_2eq is about USD 28[100] (Annex 22). The cost is well below that of other crosscutting, and irrigation / renewable energy projects approved by the GCF in India (USD 194 per tonne of avoided CO_2eq [GCF, 2017]), Haiti (USD 128 per tonne of avoided CO_2eq [GCF, 2019]) and others. Also, the proposed cost is even lower than the range reported by the World Bank, and the EIA[101] that estimated USD 30 – USD 80 / ton CO_2 eq are required to cost-effectively reduce emissions with the temperature goals of the Paris Agreement.

Table 20 Preliminary list of avoided emissions

Component	Type of activity	tCO_2 eq. per Year	tCO_2 eq. Y6	tCO_2 eq. Y20
	68 km of irrigation network rehabilitated	-101	-605	-2,016
1	1MWp of solar systems on water canals	-1,026	-6,156	-20,520
2	Climate Resilient Agriculture Production	-66,081	-396,485	-1,321,618
	Total	**-67,208**	**-403,246**	**-1,344,154**

94. Covering irrigation canals with PV panels would also save water due to the reduction of water evaporation. Evaporation rates from flowing channels may vary and according to the literature can take values as high as 5–20 mm/day [Fulford, et al, 1984].[102] The effect of various shading materials on the evaporation rate was recently investigated[103] and the results indicated that shading induced a significant decrease of the daily evaporation rate, ranging from 40% to 80%. The exact amount of savings depends on several parameters such as how the modules are mounted, water temperature and flow rate, as well as the irradiance and air temperature at each location. The exact amount of savings in the project area will be tracked by the DOWR at the Governorate level and reported during implementation.

95. It is estimated that 121,965 hectares of farming area will be brought under climate-resilient management practices (Table 5, Annex 23). These figures have been calculated by including the land under the command of the improved canal systems with paid water meters, and including the land managed by the farmers attending the Farmer

Field Schools and part of the farmland on which CWW will facilitate in introducing more resilient agriculture practices. The current cost of the distributary and tertiary canals and the installed pumps, head regulators and gates have been included to identify rough costs of the selected schemes. In addition, the value of the land on which farming practices are expected to be improved has been estimated at the minimum market rate of USD 5000 per hectare to yield the combined value of the physical assets canals. It is estimated that the total value of physical assets made more resilient to the effects of climate change and more able to reduce GHG emissions are valued at USD 634 million (Table 6, Annex 23). This is based on the assumption that the total cost of the investment in converting open canals to closed system is USD 24 million (including the original investment in the system) and that the value of the 121, 965 hectares of land brought under climate resilient practices as a result of the price of land within the catchment of improved irrigation canals and the land cultivated by the farmers of the FFS. An average price of USD 5000 per hectare was used for the calculation based on a quick survey of land prices.

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

96. **Potential for scaling up and replication:** The primary goal of the rehabilitation of the canal infrastructure in component 1 is to improve water conveyance efficiency and to provide the country with the needed technologies and technical skills to replicate activities in the other irrigated areas of Iraq. The acquired expertise will therefore be essential for the government to be able to scale up the technology throughout the country. It is expected that the improved performance of the piped system will encourage the Government to make the investment despites its limited fiscal space because of the importance of the water efficiency and water savings generated. Related to energy, the project proposes to install solar photovoltaic systems (SPVS) on existing irrigation canals to implement technology that can then be up-scaled. The Government has plans to make investments in RES and the demonstration of the innovative installation on irrigation canals can provide a cost-effective option which can then be scaled up in partnership with private sector investors. The project will assist in increasing the competitiveness of solar energy through use of existing land without any further land acquisition costs. Utilizing water infrastructure for SPVS installations is expected to create synergies with mutual gains for both fields.104 The public sector will be assisted in institutionalizing the FFS approach and include the CWW more formally into the extension system of government to create networks of support. The private sector is also expected to be engaged in the process of up scaling the use of adaptive technologies and practices as it has an incentive to increase its sale of adaptive inputs. The project will actively facilitate the linkages and network creation between the FFS, CWW, the private sector and public extension agents for scaling up. In addition, the knowledge acquired and applied within the project will be disseminated thanks to the IT4CC and integrated in the national curricula (universities and vocational schools), allowing the next generations of farmers and agriculture specialists throughout the country.

97. **Potential for knowledge sharing and learning:** The project, in particular through its Component 1 and 2, will invest in training and capacity development activities for public stakeholders, farmers, extensionists and the population of the target areas and beyond. Upgrading the technical curricula of vocational schools will ensure that the innovations introduced by the project will be sustained over time at the national level. The ICT4CC system aimed at disseminating knowledge and information through the project is expected to be further developed beyond the lifetime of the project. In addition, a crucial contribution to knowledge sharing is expected from the activities involving Climate Wise Women. Organizations working in complex and post conflict situations such as Iraq[105] have found that giving a stronger role to women contributes to more sustainable and peaceful societies. Shifting the paradigm from women as victims, to women as powerful agents of change has shown to be transformative. The current project is expected to have a significant impact in changing perceptions and stereotypes regarding women. The agriculture sector has a particularly high share of women who depend on the sector. Women's participation in the sector in terms of employment has increased from 30 to 50 percent between 1980 and 2010 (World Bank). The project will work with a cadre of women who will help to transform women's image of themselves as well as that of the traditional societies around them. The project will highlight women's profile through its approach of using women as change agents with climate change and vulnerability as its entry point. The project will mobilize technical assistance and female agricultural outreach workers or extension agents to impart knowledge and establish the cadre of Climate Wise Women (CWW) who will be trained in understanding the climate risks in the agriculture sector. This network of CWW will help to increase adaptive capacity of women farmers in the face of climate risks and empower them through enhancing their leadership skills and ability to adapt to climate change. The CWW will be actively linked to the FSS, private sector public extension system, local electronic media and will be facilitated through social networks as a dissemination strategy.

98. **Contribution to the creation of an enabling environment:** The project will implement an approach that presents a paradigm shift as it intends to establish suitably sized, financially viable, and autonomous (technical) hydraulic units represented by the self-governing WUAs. Technical design would require attention to flow-control and flow-measurement at key outlet points, to enable performance-based legal agreements between the WUA and the DoWR and enable practical and enforceable distribution modalities within the boundary of the WUA area of operation. Important contributions are also expected for the energy sector. Iraq, the second-biggest producer in the Organization of Petroleum Exporting Countries, is seeking to generate 20% of its total power production capacity from renewable sources to help ease the pressure on the country's hydrocarbon-powered electricity plants. In terms of the use of solar

energy, Iraq is currently trailing behind other countries in the MENA region in developing Photovoltaic (PV) solar energy [BP, 2019]. The path that the GoI is considering in moving forward in its solar energy strategy is based on attracting foreign direct investments with strong commitment to diversifying its energy mix and to become energy independent bolstered by its willingness to collaborate with an international array of local and foreign partners. The government is considering transferring subsidies from fossil fuels to renewable energy in order to bridge the competitive gap between them. If the country proves judicious and capable of channeling investment into key infrastructure, the benefits to the economy will grow exponentially. The project will support the restructuring of the energy policy in order to increase energy security and move towards a sustainable electricity supply for the future. Furthermore, the solar energy activities will support the creation of new markets and business opportunities. The elaboration of the roadmap for rural solar electrification and the installation of solar panels above canals is in fact expected to encourage public and private investment in renewable energy. The uptake of climate-adaptive agricultural technology is foreseen to create new business activities and incentivize private sector investment as well.

99. **Contribution to the regulatory framework and policies:** Component 3 is dedicated to the preparation of a new climate resilient policy to promote efficient use of water in agriculture that can be upscaled and used in other parts of the country. In addition, the project is expected to elaborate a road map for solar rural electrification to support the implementation the Integrated National Energy Strategy (INES) that attributes to solar energy a crucial role for providing energy security in remote areas.

100. Overall contribution to climate resilient development pathways consistent with a country's climate change adaptation strategies and plans: The project is designed to modernize the food production systems through its investments in transforming open air irrigation canals with closed or piped canals to increase conveyance efficiency and reduce the losses from evapotranspiration and increase the water use efficiency of the sector which uses up to 80% of the water in the country. The agri-food sector is still the largest contributor to Iraq's GDP after oil revenues. While agriculture's value added as a percentage of GDP has dropped from 20 percent prior to pre-2003 to 5.9 percent in 2020[106] [[Trading Economics, 2021]], agriculture's absolute value added increased from $2.5 billion in 2003 to $11.5 billion in 2014. The agri-food sector has tremendous potential to solve two of Iraq's pressing problems: job creation and private sector engagement. Agri-food is a sector that can provide job creation in a relatively short period, especially for youth and women. However, in order to achieve this potential, the sector will need to use water much more efficiently and learn to adapt to the impacts of climate change which imposes a significant risk for the sector [World Bank, 2021].[107] The World Bank estimates that agricultural GDP can grow up to $30 billion over the next twenty years. This would make agriculture a main pillar of the Iraqi economy, in addition to its critical role in post-conflict stabilization and social cohesion in Iraq's rural areas [Fathallah, et al, 2020]. Furthermore, the experiences and lessons learned will support the current process for the development of the National Adaptation Plan. The project will also help in the administration of a survey which will be conducted to document the views of women on how they are impacted by climate change to develop a solid evidence base of how climate risks impact women. This document will be developed as a knowledge product for wider dissemination. These lessons will be shared with the MoE to enable them to incorporate them in the strategies and plans being developed by the country in its NAP and other key strategy documents.

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

101. Sustainable Development Goals (SDGs): Climate change impacts threaten to erode the food security and well-being of the rural population and further exacerbate the impacts of political conflict and insecurity and the usurping of the water share by the upper riparian states to the detriment of Iraq's most vulnerable communities thereby negatively impacting the country's aspirations regarding its SDGs. Some of the wider benefits of the project are expected to assist in mitigating some of these affects and help in reducing poverty (SDG 1), enhancing food security and reducing hunger (SDG 2), enhancing the role of women and promoting gender equality (SDG 5), focusing on the sustainable management of water resources, wastewater and ecosystems, and acknowledging the importance of an enabling environment (SDG 6), investments in innovative pilots to promote green energy and elaborating an road map for solar rural electrification (SDG 7), reduce inequalities through more equitable access to water (SDG 10), undertake several key investments for combatting climate action (SDG 13), promote sustainable use of terrestrial ecosystems, combat desertification, and halt and reverse land degradation and biodiversity loss through more appropriate adaptation practices and technologies (SDG 15). In addition, there are several aspects of the investments that will enhance prospects for long-term sustainability in the agriculture sector. These include the introduction of a more favourable policy and regulatory environment with regard to water allocation.

102. **Environmental co-benefits:** The positive externalities associated with solar energy include reduced air pollution caused by oil fields and diesel generators. The project is expected to contribute to the adaptation and mitigation goals contained in Iraq's Nationally Determined Contribution (NDC) to the United Nations Framework Convention on Climate Change. Reducing transmission and distribution losses, increasing supply-side energy efficiency, and improving the operation of electric utilities are central objectives in Iraq's INDC and First National Communication to the UNFCCC. Avoided emissions resulting from these actions will help Iraq reach its overarching mitigation target of cutting greenhouse gas output by 17 percent compared to the BAU. Investments in solar panels will be accompanied by the application and demonstration of solar powered irrigation pumps for pumping surface water to the fields. In

addition, solar panels installed on top of canals can also reduce annual evaporation by an average of 39 ± 12 thousand m^3 per km of canal [McKuin, et al, 2021].[108] The approach can be combined with riverbed regulation. In India, the canal slopes were stabilized, and the riverbank was regulated to mitigate erosion with multiple environmental conservation benefits, due to the unobstructed flow of water in the canal. Case studies of over-canal solar photovoltaic arrays have also demonstrated enhanced photovoltaic performance due to the cooler microclimate next to the canal. In addition, shade from the photovoltaic panels has been shown to mitigate evaporation and potentially mitigate aquatic weed growth. Component 2 will furthermore give special attention to actions (knowledge transfer mainly) that will reduce the presence of pollutants on the natural ecosystems, and unsustainable use of synthetic chemical fertilizers and pesticides. Furthermore, the project will promote the use of shelterbelts and other nature-based solutions to support farmers and communities to mitigate and reverse desertification and ecosystems degradation.

103. **Social co-benefits including health impacts***:* Higher temperatures and reduced rainfall also drive rural-to-urban migration and increase the risk of drought, food insecurity and water-related diseases. The project is expected to lead to additional social co-benefits such as greater equity in investments for small-holders, reduction in conflicts over water and more equitable distribution for tail end users. Land holding system in Iraq is a mixture of owner operator, lease holding and sharecropping arrangements. In the rural areas of the poorest governorates, small-scale farmers and livestock producers are the most marginalized households with unemployed young men, women, and women-headed households among the most vulnerable. Tribal conflicts over water sources have erupted sporadically in the south. In the frame of a survey conducted in target areas, conflict over water resources (e.g. access, allocation, use) has been indicated as the main source of dispute among communities and 22% of respondents signaled problems related to it requiring collective action[109] (Annex 6). In general, the three most prevalent water-dispute drivers refer to water management bodies and their lack of capacity to cooperate and preserve/ treat public water supplies, together with the blockages/ delays of water initiatives at higher administrative levels (FAO, 2023). There is also currently a growing concern over farmers leaving the countryside and moving to the cities causing additional burden on the crumbling infrastructure and public services in the cities. Over-crowding in urban areas generates its own set of tensions among people packed together in crowded spaces. Since these types of co-benefits are difficult to measure, these are not highlighted in the log-frame but only described in this section.

104. **Economic co-benefits:** Lack of rain and increased evaporation brought about by higher temperatures puts further pressure on the availability of water resources in Iraq, which is considered to be among the countries heavily impacted by climate change. During 2017 and 2018, the water reserve shrank to around 12 billion cubic meters only and prompted the Ministry of Water Resources to ban some water-intensive crops like rice and yellow corn.[110]Following the announcement of a complete ban on rice cultivation in early June 2018, the Iraqi Ministry of Water Resources agreed to allow farmers to produce 1,250 ha (5000 donum) of rice later the same month. The prohibition initially included corn, cotton and sesame, though the ban on corn was subsequently lifted. The drought spurring the ban continued until November 2018, forcing Iraqi officials to direct available water resources to drinking water, industrial use, and horticulture crops. The reduction in just one crop rice was estimated to entail a decrease of 297 thousand metric tonnes from the previous year. The value of this crop alone was valued at USD196 million at the export market price for Iraqi rice in 2018 of USD 0.66 per kg. The project is expected to introduce opportunities to change the crop mix and introduce higher value crops once more reliable water supply is available. This is expected to generate additional economic benefits. Apart from prevention of loss from crop production, there are also expected to be economic benefits generated as a result of the use of solar panels on canals due to the reduction of water evaporation.

105. **Gender-sensitive development impact:** The project will specifically target women who already face inequalities within their society, and for whom climate change has the potential to reinforce and exacerbate disparities. Rural women in Iraq, as in other areas in the MENA region, are generally the lead caregivers in their families and households, they will likely face a heavier burden as they are required to walk longer distances to fetch water and fuel. The project will assist in helping women deal with food shortages due to climate-driven disasters as women are the “backbone of their family”, supporting household food security, health, and wellness while also contributing to the household budget through their contribution to crop and livestock production and other sources of income. Given this central role in families and communities, involving women will enable them to strengthen their critical role in preparing, adapting, and responding to climate change. The project will assist in deepening the participation and leadership of women in the implementation of Iraq’s INDC (2015). The project hopes to enable deeper change for women at the household and community level through their role as Climate Wise Women. The active engagement and leadership of women will help to enhance women’s adaptive capacity, strengthen their self-confidence, and demonstrate to the community the important role that they can play and serve as a role model for other women to emulate in the community.

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

106. Iraq encounters a host of complex and difficult challenges on a range of issues including water security, land degradation, desertification, loss of vegetation and biodiversity, salinity, etc. which poses a significant hindrance to its ability to become a resilient nation. Climate change in Iraq is currently manifesting itself in erratic precipitation, higher than average temperatures and increased disaster intensity (von Lossow 2018). Since the 1950’s, mean annual temperature has been increasing by approximately 0.5-0.7°C per decade [WFP, 2019][111] while precipitation trends for

the period 1950-2000 varied spatially over the country. Climate change is expected to increase Iraq's mean annual temperature by 2°C and decrease its mean annual average rainfall on a watershed level by more than -5 mm/dec in the time period until 2060. The consequences of the precipitation reductions are serious with significant effects on the growth cycles of winter crops [FAO-GEF, 2021]. Desertification and water scarcity due to erratic rainfall patterns and river flow fluctuations increasingly render Iraq vulnerable to the adverse effects of climate change [WB, 2021]]. The frequency of heat waves will increase, and heat stress is expected to be more frequent in the next five years (World Bank, 2017). Along with higher temperatures, the occurrence of both sand and dust storms is also likely to increase. The levels of water salinity and soil salinity, especially in the Euphrates River basin, are high and is expected to increase in parallel with the temperatures increase as a result of rising evapotranspiration. Consequently, water stress will increase, and efficient irrigation techniques are crucial to maintain productivity and food security (Adamo et. al 2018).

107. About 75% of the irrigated area of the Mesopotamian plain (more than 2 million ha) is moderately saline and another 25% has levels of salinity that have converted once productive lands into salt-affected wastelands. It is estimated that desertification affects 39% of the country impacting on soil salinity, soil erosion and wind erosion with scenarios indicating future threats on coastlines due to sea level rise. This is decreasing land productivity, diminishing yields, increasing harvest losses and threatening the livelihoods of between 18% to 23% of the population who depend on agriculture for their livelihoods. This figure reaches around 40% in the southern governorates. Farmers of saline soils are using only 30% of their land for cropping and are achieving only 50% of the expected yields. Soil salinity caused cropping systems to move away from high-value crops to lower-value crops. It is estimated that 53% of the population in Iraq are vulnerable to food insecurity.[112] Prolonged climate induced drought could also spur greater migration to cities, accelerate urbanization and intensify pressure on already strained and degraded economic and social infrastructure. Climate change, and specifically extreme weather events in the southern governorates, including the recently recorded high temperatures and flash floods, has further impacted the livelihoods of vulnerable households and is forcing their migration to urban areas. The Government is referring to them as ‘’climate-migrants". There is an increasingly urgent need to overcome the high climate change adaptation deficit and limited farmer awareness about climate resilient technologies and practices.

108. In addition to changes in climate patterns, the critically important Euphrates and Tigris River basins are faced with increasing challenges in terms of demographic pressures, upstream hydro-infrastructure developments, water-quality concerns and recent and on-going conflicts which will deeply affect future water availability in the basins [GoN, 2018]. Cultivation of field crops, particularly wheat and barley in winter and maize and rice in summer, constitutes the greater part of irrigated agriculture, in addition to other field crops, winter vegetables, fodder and orchards. A major consequence of the diminished freshwater flow from the Tigris and Euphrates into the Persian Gulf is saltwater intrusion upriver and salinization of groundwater. As the amount of water diminishes due to climate change, the control of the Tigris and Euphrates has the potential to become a conflict 'flashpoint' in the region if their flow, amount and access continue to benefit upstream users to the detriment of Iraq. There are currently no transboundary riparian agreements in place for the sharing of the rivers. The impact of conflict on the agricultural sector has also been devastating and includes damage to water systems, irrigation facilities and other agricultural infrastructure, disruption of value chains and losses of personal assets, crop and livestock production, and food supplies. There have been little investments in innovation and climate proofing especially in the agriculture sector, as a result of which many of the farming households have had to abandon agriculture and rely on daily wage labour or depend upon the Government food security programme. Investments in irrigation and drainage infrastructure, together with the provision of institutional development support for water users' associations, and training on the adoption of climate resilient irrigation and production technologies are key. At the same time the government needs to overcome the barrier of a lack of supportive policy for water use and regulation for agriculture production, to ensure efficient use of inputs, especially water, and a transformative climate and environment related strategy to respond to the growing climate risks.

109. According to the INC document prepared by MoE, it is likely that the adverse effects of climate change would reduce the agricultural production and make the problem of water shortage worse.[113] The most important and required adaptation measures for the agricultural sectors will arise due to an expected decrease in areas which are rainfed. There is an urgent need to invest in converting open irrigation systems to piped systems, lining field channels to reduce waste and to increase on-farm water management efficiency. This will entail an increase in irrigation efficiency through the usage of more efficient irrigation technologies (e.g., drip irrigation, sprinkler irrigation), the promotion of crops with low water consumption needs and the strengthening of associations and arrangements for water use such as through WUAs and greater participation of women who have an increasing important role in the agriculture sector. There is need to disseminate through the private sector tested crop species and varieties (especially for wheat) resistant to drought, salinity, and adapted to changes in climate to ensure that adequate inputs are provided to the farming community at scale for adoption. Climate change trends will need to be monitored for ensuring awareness and access to information to government and farmers for timely responses and decision making on adaptation procedures.

110. Women in rural areas face greater food insecurity as well as more barriers to education, formal employment and access to finance, which hinders their progress out of poverty and limits their adaptation to climate change. Women are especially impacted by the effects of climate change; in a drought situation, women and girls bear the increased burden of fetching water and facilitating other basic household needs from longer distances as water resources dry up.

In 2017, the agriculture sector provided employment for an estimated 44% of the total female workforce yet limited financial proficiency, poor access to approaches/technologies that promote agricultural productivity, compounded by capacity constraints, hinder women to diversify their livelihoods and maintain the food security of their households in the face of climate change [Vilardo, V et al. 2018]. The issue is critical in many of the Governorates whose supply of water is inadequate, such as Muthanna. The households in these villages suffer acute food shortages and women and children show much higher rates of malnourishment.

111. Another sector which is impacted by climate change is the energy sector. Although the government has announced on several occasions its aim to achieve a 20% share of RES within the current decade, there is currently no detailed strategy or policy on how to achieve this. Energy infrastructure projects in Iraq contend with a unique array of climate challenges. The energy sector has been negatively affected (kWh per capita) from increase of temperatures contributing to further losses in electric power with hydroelectric generation plants capacity reducing from 1,846 MW to 400 MW. Higher temperatures will simultaneously increase electricity demand, decrease its supply and impair its delivery, which has also negative impacts on electricity availability to enable efficient and sustainable use of water resources. On the demand side, more heat waves will cause load curves to spike, whereas on the supply side, hotter temperatures will reduce the capacity parameters of the power generation plants. Lack of adequate access to electricity during the summer months has also been a major factor in civic unrest and demonstrations. However, the electricity grid infrastructure is dilapidated mainly due to years of conflict and unable to deliver adequate levels of electricity supply [WB, 2019b].[114] Iraq does not have access to the low cost, long term limited-recourse project debt widely available for GCC and other MENA countries as most global financers and lenders are unfamiliar with Iraq and its infrastructure investment environment. Iraq also does not have a clear policy plan for renewable energy. Most recommendations on the energy policy as stated in the Integrated National Energy Strategy (INES) in the past were either ignored or partially implemented. With access to heavily subsidized fuel and little political appetite for passing the high initial costs of renewable technologies onto the consumers, the most likely scenario will be the government's continuation to delve into fossil fuel generation. The country needs to invest in innovative pilots to promote green energy and elaborate a road map for solar rural electrification.

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

Existing national climate strategy

112. The Government of Iraq has taken strong ownership for trying to address the challenges it faces with respect to climate risks over the last decade despite the political instability and the turmoil in the country. Farmers in Iraq are struggling to produce under poor environmental conditions with few tools for coping with drought, salinity, pests, and shortages of inputs and lack of appropriate technologies. The agricultural sector in Iraq is highly vulnerable to climate change impacts. Climate change is already showing major impacts in terms of water scarcity and soil salinization, with increased vulnerability of poor rural communities. The predicted future climate conditions will significantly reduce water availability in the spring/summer periods critical for crop production, causing marked reduction in runoff relative to input precipitation, increased evapotranspiration, and decreased soil moisture, and increased soil salinity risk. The country is strongly committed to dealing with these aspects.

113. The country ratified the UN Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol in 2009 as a Non-Annex I country. The MoE worked with UNDP, Global Environment Facility (GEF), and the UN Environment Programme (UNEP) in the preparation and submission of its Initial National Communications (INC) to the UNFCCC. Iraq signed the Paris agreement on climate change in December 2016 but has yet to ratify the agreement. The Government has worked to establish the institutional infrastructure necessary to facilitate the implementation of the provisions of the UNFCCC. The National Environmental Strategy and Action Plan for Iraq (2013-2017) includes the identification of problems, causes and potential solutions to combat desertification, land degradation, drought as well as national action programmes. The Government of Iraq has remained committed to the cause of climate change and has laid down an economy-wide plan to cut GHG emission by around 14% from the business -as-usual scenario. The MoE has committed to the development of a national strategy for adaptation of impacts of climate change, noting that the water resources sector will be one of the most vital sectors included in the strategy. The preparation process will include working with regional countries to adopt a regional programme to combat drought, dust storms and desertification. The MoE, as the national liaison actor, in cooperation with the Ministry of Water Resources, the Ministry of Agriculture and other relevant ministries have also taken several actions to protect Iraq's environment, especially its water resources. These include the following; (i) in collaboration with UNDP and UNESCO, a comprehensive study regarding the integrated framework for drought risk management; (ii) Forming a committee with the assistance of international experts from UNEP, UNDP, UNESCO and FAO to study the phenomenon of repeated soil and dust storms (SDS) and (iii) in cooperation with UNEP to train local cadres in desertification issues and (iv) to meet the requirements of UNCCD, including reporting and preparation of strategies, programmes, national legislations and projects to mitigate desertification.[115]

Agriculture Policy in the country

114. Agricultural policies continue to be a priority in the country and the National Development Strategy makes significant allocations for the sector. Unfortunately, due to substantial under-spending within the sector and the

exorbitant costs of public sector staffing, investment within the agricultural sector has had little impact on growth and employment. As a result, a revision of effective policies with a new framework approach, such as public-private partnership, is being considered to reap expected benefits in terms of agricultural growth and employment improvement over the short and medium term.

Existing GCF country programme

115. There are three readiness projects which have been signed between Iraq and GCF between 2017 and 2019. The Government has established an NDA, finalized its country programme and the internal legal system of the NDA. This will enable the Ministry of Environment, as a national focal point for the GCF, and the UNFCCC to work in an integrated and transparent manner. In addition, a project has been submitted by WFP following the Simplified Approval Process (SAP) for Iraq for building adaptation capacity of vulnerable households. The total value of projects is around USD 13.673 million. Iraq has also submitted a proposal with the International Fund for Agriculture Development to the Adaptation Fund for Building Resilience of the Agricultural Sector to Climate Change (BRAC). The details of the GCF projects are given in the Table below.

Table 21 List of GCF Projects in Iraq

	By	Date	Duration (mo	Type	Amount
NDA Strengthening & Country Programming	UNDP	14/09/2017	24	Readiness	668,295
Promoting Climate Resilient Livelihoods of Food Insecure People in Southern Iraq	WFP	23/08/2019		SAP	10,000,000
Strategic Frameworks	UNIDO	22/11/2019	18	Readiness	373,520
Adaptation Planning	UNEP	18/12/2019	36	Readiness	2,632,053

116. *NDA Strengthening & Country Programming-UNDP*: The NDA Strengthening & Country Programming proposal was approved in September 2017 for implementation by UNDP. The proposed national readiness programme aims to support the Government of Iraq in strengthening the national capacities to effectively access and efficiently manage, track and guide climate financing. Guided by Iraq's national development policies and priorities, the readiness programme established a National Designated Authority (NDA), strengthened stakeholder's engagement and effective participation in the process and is assisting Iraq in developing a gender-responsive country programme including climate change adaptation and mitigation priorities,

117. *Promoting Climate Resilient Livelihoods for Food Insecure People in Southern Iraq -WFP*: The project will be executed by WFP in along with the Ministry of Environment. The Ministry of Agriculture is expected to support implementation. This USD 10 million project aims to introduce practices that build the resilience of vulnerable households whose livelihoods are at risk from climate change. The project interventions will focus on three governorates namely Qadisiyah, Thi-Qar and Basra. The project intends to increase irrigation efficiency and water availability; enhance agricultural productivity through the promotion of stress tolerant seed varieties; foster multi-level efforts for mentoring and capacity strengthening; improved climate decision-support tools and services; as well as livelihood diversification through provision of climate-resilient economic assets. The project will capture knowledge on climate adaptation to influence local and regional adaptation plans in selected governorates in southern Iraq. The funding proposal has not yet been approved and no work has started on the ground.

118. *Technology Needs Assessment and Strategic Frameworks- Climate Technology Centre and Network (CTCN) through UNIDO.* This proposal was approved in November 2019 and seeks to provide technical guidance and assistance to the Republic of Iraq to aid its development of a comprehensive Technology Needs Assessment (TNA) and action plan aimed at conducting a categorization and prioritization of mitigation and adaptation technologies that will comply with the Republic of Iraq's NDC (2015). This work will enable the Republic of Iraq to organize its process for establishing a TNA, contribute directly to ongoing country programming process, establish a coordination mechanism and aid the prioritization of actions and (sub) sectors that can be used by the Government to develop its pipeline of projects to be submitted to the GCF. High level political support has been initiated within the policy development process and constitute a solid basis for identifying the most appropriate technologies that can be used to implement key strategies. A key deliverable for the project will be the identification of a number of project ideas in the form of technology fact sheets that will feed into the GCF pipeline.

119. *Adaptation Planning-UNEP*: The objective of the proposed project approved in December 2019 was to advance the NAP process in Iraq by strengthening institutional, technical and financial capacities. In particular, medium- to- long-term adaptation will be mainstreamed into national and local planning. This will ensure that NAP implementation is successful beyond the lifespan of the proposed project and that relevant stakeholders are actively engaged and involved with ongoing adaptation actions. The project is also expected to promote coordination and synergy at the sub-national level and with other MEAs, build awareness about the NAP process in the country and support communication of the results to stakeholders. The four expected outcomes of this project include (i) National and sectoral systems and processes for the development and implementation of the NAP developed; (ii) Gaps in climate knowledge for the NAP process assessed and bridged (iii) National Adaptation Plans developed; and (iv) Funding strategy for the implementation of the NAP process and studies to inform medium-to long-term adaptation investments in Iraq.

Alignment with existing policies such as NDCs, NAMAs, and NAPs

120. In 2015, Iraq worked with UN Environment and other partners to present its Initial National Communication to the UNFCCC. This document outlines a series of national programmes, strategies and laws that Iraq has undertaken as part of its commitment to the decisions of the UNFCCC. It also outlines vulnerable sectors and proposes various adaptation and mitigation measures, calling for financial and technical support for implementation. The Iraqi government considers adaptation to be a priority for the country, particularly in addressing the impacts of climate change on poor and vulnerable communities [GoI, 2015]. In 2021, Iraq renewed its commitment to combating climate change by submitting its revised Nationally Determined Contributions (NDC) document to the Paris Agreement. The activities of the project are in line with the new objectives that increase the conditional GHG emission reduction target to 15% compared to the BAU (previously 13%) and the unconditional from 1% to 2% compared to the BAU. These targets should among others be achieved through the installation of 12 GW of renewable energy power. To increase the resilience of the population, main adaptation interventions of the NDC are among others to improve the water infrastructure and prepare the water sector for future increasing demand and potential deficit by applying an integrated management and planning approach. This is also very much aligned to central challenges and activities addressed by this project. Iraq NDC aims to attract new investment opportunities and provide more engagement for private sector in the climate change field [UNDP, 2021]. As explained more in detail in par. 58, there is a significant potential to upscale the investments of output 1.2.1 with private sector investment as a contribution to the NDC. This topic will above all be addressed in the implementation of the roadmap for rural solar electrification that is expected to encourage public and private investment in RES. Iraqi experts and officials have discussed and agreed on an outline for the country's actions for mitigation that will be incorporated in the Nationally Appropriate Mitigation Action (NAMA).

121. UNEP is assisting in assessing gaps in climate knowledge for the NAP and identifying the funding strategy for its implementation. The NAP process will build on Iraq's INC and the National Framework for Drought Risk Management [UNESCO Office for Iraq, 2014]. In this context, the Initial National Communication acknowledges the need for sectoral policies and legislative measures and the need for coordination to ensure effectiveness. The GCF project will develop sectoral adaptation plans for the priority sectors to address the effects of climate change in Iraq. These adaptation plans and the adaptation activities outlined therein will be mainstreamed into strategies for implementation and development planning at the sectoral national and Governorate levels. The NAP process is fully aligned with Iraq's main strategic plans, including: i) the NESAP20; ii) the National Development Plan (NDP); and iii) Iraq's National Biodiversity Strategy and Action Plan (NBSAP, 2015-2020).

122. The current project is aligned with the key climate mitigation and adaptation plans in the country with a particular focus on adaptation actions contributing to improved water management and agricultural practices toward advancing climate change resilience [INDC, 2015]. There are currently several emerging national programmes being carried out by the Ministry of Agriculture that are piloting new practices and aiming at productivity enhancement and efficient use of natural resources and adaptation to climate change. These programmess include: (i) the national programme for the use of on-farm modern irrigation systems; (ii) the national programme for the improvement of wheat production; (iii) the national programme for the development of drought and salinity tolerant crops; (iv) the rangeland improvement and combatting desertification program; (v) the organic agriculture programme; (vi) the programme for the establishment of an agricultural meteorology network; (vii) the programme for the genetic improvement of local animal breeds; and (viii) the conservation agriculture project [AF, 2018]. In addition, SRVALI will also prepare key policy documents on water allocation strategy and devise a water compliance plan and a rural electrification strategy that can inform government plans and regulatory frameworks on water and energy issues.

Role of National Designated Authority

123. The Iraqi Ministry of Health and Environment is the NDA for the project. The MOE established the National Unit for Climate Change, a national body responsible for implementing the requirements of the UNFCCC. This unit later evolved into the Iraqi National Centre for Climate Change (NCCC). In 2011, the Permanent National Committee for Climate Change (PNCCC) was established in 2016. The MoE, the PNCCC and the NCCC are the main institutions responsible for the coordination and implementation of policies and programmes on climate change in Iraq. The mandate of the MoE is to coordinate the development of climate policies and facilitate the integration of climate change into environment and development frameworks. The NCCC seeks to enhance the technical capacity for climate change implementation in the country by enabling inter-agency collaboration and undertaking requisite international climate reporting. However, there is a need to strengthen the existing capacity at the national level and across various sectors to support an integrated approach for adaptation to climate change. An Institutional Capacity Assessment for the MoE was carried out in 2006 in collaboration with UN Environment's Post Conflict Branch. As part of readiness for NAP, MOE is being assisted to strengthen the Permanent National Committee on Climate Change (PNCCC) and the NAP Team. MOE has also established sectoral and cross-cutting Task Force of working groups, building upon groups already formed under the Initial National Communication and INDC taking into consideration the specific NAP requirements.

124. The technical capacities within MoE, Ministry of Agriculture (MoA), Ministry of Water Resources and Health need to be developed, as well as the institutional capacity of these and other line ministries to coordinate a cross-sectoral and multi-level approach for medium and long-term adaptation planning. Environmental Directorates are in charge of implementing environmental initiatives at the Governorate level. With Iraq undergoing a decentralisation

process, the capacity of Governorate authorities should be strengthened so that medium- and long-term adaptation opportunities can be identified, implemented, and monitored at Governorate level. The Government of Iraq does not currently have a formalized or systematic approach to monitoring, reviewing or reporting on climate change adaptation initiatives at national, state or local levels. There is consequently limited knowledge regarding the strengths and weaknesses of such initiatives. As a result, lessons learned have not been used to identify national adaptation priorities, nor have they been incorporated into revisions of existing or new initiatives. Currently, only externally led project-based initiatives monitor and evaluate their performance in a formalized manner. The development of a national monitoring and evaluation system would provide a systematic approach to reviewing all climate change-related initiatives undertaken in Iraq. This would be particularly beneficial for the MoE because this information is vital for informing future decision-making and advancing the NAP process in Iraq.

Engagement with civil society organizations and other relevant stakeholders, including indigenous peoples, women and other vulnerable groups

125. The emerging civil society of Iraq is composed of a wide variety of actors who have varying levels of expertise, resources, and technical specialists. Significantly, the sector shares a self-described common purpose of increasing the role of the community, including Indigenous Peoples, where present, in the decision-making process. CSOs employ diverse outreach and communication strategies [NDI, 2011]. The project intends to involve selected civil society organizations and NGOs to mobilize smallholder farmers and women from the target communities where capacity exists for them to undertake this work. In case there is not sufficient capacity in the project Governorates, technically qualified service providers will be selected for the purpose. Nevertheless, the CWW women will be linked to appropriate civil society organizations which can provide them additional support and outreach. The project also plans to engage the private sector input suppliers of climate adaptive technologies to ensure that farmers have a steady supply of technologies and inputs that can make them more climate resilient and to increase the resilience of businesses linked to smallholders for their produce. The project has carried out extensive stakeholder consultations. Through the consultation process, entities and other stakeholders were mapped (Table 1 Annex 7) for project implementation, including on management and technical leadership. At the national level and local level, all relevant Ministries and governance authorities were consulted on on-going basis. Bilateral meetings were also held with United Nations agencies, bilateral development agencies, NGOs, CSOs, local stakeholders, as well as the private sector. Regardless of COVID-19 restrictions, the project managed to organize 3 workshops to identify a common vision among all stakeholders, priority activities, project implementation arrangements and other project needs adapted to the local context and to consider the needs identified by stakeholders. Additionally, stakeholders will be engaged in project implementation throughout the duration of the entire project. Furthermore, the project's gender-specific consultations and activities are detailed in the Gender Action Plan (GAP).

126. Related to the participation of local stakeholders in the canal operation and maintenance (O&M), the project will adopt the following strategy: The consulting firm will establish as part of the detailed design, elements necessary to guarantee a good operation and maintenance of the targeted irrigation schemes and of the solar systems of component 1. At the end of the construction and installation phase, an Operation and Maintenance Manual will be prepared by the consulting firm when all the elements of the equipment actually supplied will be known, including the instructions of the equipment suppliers. During the post-project phase O&M will remain under the responsibility of the Ministry of Water Resources, that will provide the necessary resources to guarantee O&M for the primary infrastructure (head work and primary canals) and for the solar system. For the secondary and distributary systems a progress transfer plan will be put in place with the support of the project to have the O&M move from the MoWR to the users represented by their WUAs as stated by the fourth amendment to law 12 of 1995 (in its article 1, item III, paragraph C) that stipulates that the beneficiaries of a common water source must establish an association for its management, operation and maintenance.

127. The communities will be involved primarily via the WUAs and the local institutions that – within the current legal framework - will be part of the process since the design phases of all infrastructures. Communities will remain in constant contact with the Gender and Social expert as well as the PMU/M&E team to support the monitoring of progress as well as signaling problems and issues. Additionally, the work will count on reporting from the climate wise women reporting during the project to keep communities involved and prevent/timely react to concerns and issues. Furthermore, as reported in Annex 7, consultations with stakeholders (e.g. communities and institutions) will take place yearly, at the time of the preparation of the Annual Work Plan and Budget (AWPB) – i.e., at the beginning of each of the six project Fiscal Years (FY). In essence, stakeholders will be engaged in the monitoring and evaluation processes during the entire execution of the project. Finally, stakeholders will be engaged in the monitoring and evaluation processes during the entire execution of the project.

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

Financial and Economic Analysis

128. The Economic and Financial analysis of the project shows that it is financially and economically profitable (Annex 3: Economic and Financial analysis). Main sources of benefits in Component 1 include the increase in

agricultural productivity, crop intensity and energy savings from the rehabilitation of the targeted irrigation schemes that will support farmers to better deal with climate change induced water scarcity. Main sources of benefits in Component 2 include the increased agricultural profits in farms from the adoption of climate resilient agricultural practices. Additional benefits for both components include the reduction of GHG emissions due to reduction in the use of fossil fuel generated electricity consumption.

129. A set of financial models were elaborated to assess the project's expected financial results in farms. Crops models were also selected due to their high potential to attain significant improvements in water use efficiency and crop water productivity, following the current cropping pattern in Najaf, Muthanna and Karbala. Models used the available climate-adaptive technologies described in Annex 2 and Annex 25. Farmers were divided into several categories; Type 1: benefitting from investments in the irrigation schemes in Component 1 (for Wheat, Barley, Rice, Corn and Dates and Grapes farms); Type 2: those participating in Farmer Field Schools in Component 2 (for Wheat, Barley and Rice), outside the area of the irrigation schemes. Among the last ones, another desegregation was made between farms that are expected to make private investments after project completion. Detailed results on financial profitability are shown in Table 22 below. Most of models present positive incremental margins per farm that vary from Iraqi Dinar (IQD) 7.792 Barley farm in Component 2 to IQD 216.601 Rice farm in Component 2. Consequently, most of the proposed models show positive financial profitability at a financial discount rate at 7%. The incremental margins would result in an increase from 5 (Barley) to 41 per cent (Rice) in the annual income for a vulnerable Household in Iraq (based on a 2 person minimum salary income per household in the country).

Table 22 Financial Profitability results per farm model

Financial Results		Component 1 Farm models (IQD/dunam)			Component 2 Farm Models- FFS (IQD/Dunam)			Component 2 Farm Models- FFS+ (private investments after project completion)	
		Wheat	Barley	Rice	Wheat	Barley	Rice	Wheat	Rice
WOP	Costs	285,501	203,701	662,931	296,501	214,701	673,931	296,501	673,931
	Sales	450,459	263,634	1,062,131	450,459	263,634	1,062,131	450,459	1,062,131
	Margins	164,957	59,933	399,200	153,957	48,933	388,200	153,957	388,200
WP	Costs	291,963	199,000	645,103	289,863	222,684	636,177	295,650	676,917
	Sales	542,238	279,409	1,240,978	542,238	279,409	1,240,978	542,238	1,240,978
	Margins	250,274	80,409	595,875	252,374	56,725	604,801	246,588	564,061
Incremental		85,317	20,475	196,675	98,417	7,792	216,601	92,630	175,861

130. The project also demonstrated a positive Economic rate of return of 16.06% under the base case scenario (excluding valuating carbon emissions avoided). The NPV reaches USD 48.6 million with an economic discount rate estimated at 4% (given the Central Bank of Iraq current policy interest rate Table 23 below). The economic profitability scenarios were obtained after applying conversion factors to get economic values of models. Aggregated economic incremental benefits, with an adoption rate of 60%, were compared with total project costs (excluding investment costs already considered in the models in order to avoid double counting). Finally, the scenario analysis incorporated environmental externalities estimated at -1,344,154 equivalent tCO2 avoided during the benefits lifecycle (with shadow prices of carbon taking the World Bank's low shadow price scenario). More references on parameters are presented in Annex 3 EFA Spreadsheet.

Table 23 Economic Profitability indicators scenarios

Scenario (Shadow price of Carbon)	Economic Internal Rate of Return (%)	NPV USD Million
Base Case Scenario	16.06	48.6
Market Price	17.22	52.36
Low Price Value	33.38	94.35
High Price Scenario	n/a	140

Sensitivity analysis

131. A sensitivity analysis was undertaken using different risk-occurrence scenarios. These included an increase in project costs (10% and 20%), a reduction in project benefits (10% and 20%), and combined scenarios (of both benefits reduced by 10%, 20% and 30% and costs increased by 10% or 20%). Additionally, a delay in project benefits (1 and 2 years) and the reduction in benefits by 50% every 2 and 3 years due to the occurrence of climate change shocks were considered. NPV remains positive so the project is still considered to be profitable under the tested scenarios. The sensitivity test was also linked to the key risks and other key variables. Detailed assumptions and calculations are attached in Annex 3 and Annex 25. Table 24 below presents the main general results of the sensitivity test.

Table 24 Sensitivity Analysis

Sensitivity Analysis								
	Δ%	Risk					EIRR	NPV (US$)
Base scenario							16.06%	48,602,508
Benefits	-10%	Combined risks on sale prices, yields, adoption rates					15.72%	43,100,783
	-20%						15.31%	37,599,058
Costs	10%	Increase in expenses, input prices and unit costs					15.76%	47,961,034
	20%						15.46%	47,319,560
Delay 1yr in Benefits		Adoption rate / delays					15.21%	41,879,632
Delay 2yr in Benefits							14.24%	35,415,329
External Shock every 2 yr	50% Benefits	External shock (prices, quantities, climate)					12.96%	18,190,380
External Shock every 3 yr	50% Benefits						15.30%	42,180,514
Mixed Scenarios		Costs	10%	Benefits	-10%		15.39%	42,459,309
			10%		-20%		14.95%	36,957,584
			20%		-20%		14.61%	36,316,110
			20%		-30%		12.86%	20,452,409
			20%		-10%		15.07%	41,817,835

E. LOGICAL FRAMEWORK

E.1. Project/Programme Focus

☒ Reduced emissions (mitigation)
☒ Increased resilience (adaptation)

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

Assessment Dimension	Current state (baseline)		Potential target scenario (Description)	How the project/programme will contribute (Description)
	Description	Rating		
Scale	The country lacks policies, knowledge, skills and financial capacity to address the adverse impacts of climate change on water resources. Therefore, farmers in many parts of the country are increasingly facing challenges to farm strategic crops for the country (e.g. rice and corn) due to increased irrigation requirements, while at the same time lacking a modern and climate proofed irrigation network and use of resilient agronomic practices.	Low	New technologies, practices and approaches, will be adopted by both the Government and the private sector through supportive policy and incentives to adopt the climate resilient practices. The farming community will demand the demonstrated technologies that enhance climate resilience. The private sector will provide these in response to the increased demand. These measures are expected to improve the scalability of climate benefits in terms of reducing the losses from climate events, introduction of seed and cropping patterns which are more resilient to weather risks and enable farmers to adapt to climate changes.	With its 3 components the project will provide Iraq's stakeholders with the needed technical assistance and financial support to address climate-induced water stresses and prepare for future projected climatic changes. It is in this regard expected that the demonstration of the significant benefits of efficient water and solar systems will motivate the Government to scale up as to reach sectoral development targets.. It is expected that the introduction of the new underground water systems and the introduction of solar energy will demonstrate effective and efficient water conveyance systems which the Department of Water Resources will implement and scale up at the Governorate level. The private sector will be closely involved in the introduction and demonstration of the climate adaptive production practices and technologies and will play an active role in their dissemination. The Government is expected to emulate the demonstrated techniques in other parts of the country and collaborate with the private sector which has the technical and implementation capacity for investments in energy efficient technologies provided there is demand for its services, which is projected to increase. In particular, the water-energy-food nexus will be addressed by facilitating integrated and interrelated investments enhancing water conveyance efficiency, energy production to increase water security and crop water usage that can be scaled up to the whole country. The same applies to capacity development activities promoting climate adaptive knowledge of extensionists and farmers.
Replicability	Under a BAU scenario, innovations and technologies hardly make it outside project areas due to limited support to the state to replicate best practices at the national level.	Low	National stakeholders and similar international stakeholders from Arab speaking countries, will be able to access and replicate the innovation (e.g.	The project will introduce in Iraq well tested technologies and practices involving in each phase of the deployment local expertise from public institutions, private sector, academia and civil society organizations. Also, the project will transfer in the national curricula (universities and vocational schools) the innovations introduced by the project. This will allow the next generations of farmers and agriculture specialists to use these regardless of

			technology, practices and approaches) introduced by the project. Additionally, the project will scale up and replicate success stories by introducing in the national curricula linked to agriculture and related infrastructures (Universities and vocational schools) the knowledge of introduced technologies, approaches and practices.	the region and the country. Finally, thanks to IT4CC approaches the entire online population will be able to access and experience project's innovations.
Sustainability	Operation and maintenance in agriculture is a major voice in the national budget and the low technology applied is one of the major causes of low-cost efficiency of agriculture investments. Farmers are not actively involved in the O&M phases and the limited capacity at local level causes poor management of key resources such as land, water and energy.	Low	Introduced changes in technologies and farming practices and approaches will reduce the weight on national resources (e.g. land, water and energy) and will involve more farmers via the existing Water User Associations.	The project will support Iraq shifting to modern and climate adaptive irrigation infrastructures and increasing the resilience of farmers and their organization, this will lead to a reduction in costs and increase in incomes contributing to the long-term sustainability of the investments

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

Select appropriate IRMF core and supplementary indicators to monitor project/programme progress. More than one IRMF (core and or supplementary) indicators may be selected as applicable for each GCF results area and project/programme outcome (as defined in the table in section B.2(b)). If IRMF indicators are unable to measure any given project/programme outcomes, project/programme-specific indicators should be developed under section E.5 (project/programme specific indicators).

GCF Result Area	IRMF Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions / Note
				Mid-term	Final[116]	
ARA1 Most vulnerable people and communities	Core 2: Direct and indirect beneficiaries reached	Independent evaluations (at midterm and final); external third parties' surveys	0	351,887 total beneficiaries (1,417 direct and 350,887 indirect beneficiaries) From among these, 174,891 are women (713 direct and 174,178 indirect.	721,204 total beneficiaries (14,037 direct and 707,167 indirect beneficiaries) From among these 358,254 are women (6,801 direct and 351,453indirect).	There is relative political and economic stability in the area. The GOI provides all clearances and approvals for canal works and installations in a timely manner. There is no increase in over-use of river water by upper riparian countries.

ARA2 Health, well-being, food and water security	Core 2: Direct and indirect beneficiaries reached		0	543,279 total beneficiaries (all direct beneficiaries) From among these, 268,921 are women (all direct beneficiaries).	1,220,155 total beneficiaries (1,019,155 direct and indirect beneficiaries) From among these 605,318 are women (505,424 direct and 99,894 indirect).	Surveys will be commissioned by the project to external and independent companies at mid-term and termination of the project. Details about beneficiaries are available in Annex 23.
ARA3 Intrastructure and built environment	Core 2: Direct and indirect beneficiaries reached		0	11,165 total beneficiaries (8,126 direct and 3,039 indirect beneficiaries) From among these, 5,549 are women (4,038 direct and 1,511 indirect beneficiaries).	16,775 total beneficiaries (11,608 direct and 5,167 indirect beneficiaries) From among these 8,337 are women (4 direct and 99,894 indirect).	
ARA2 Health, well-being, food and water security	Core 4: Hectares of natural resources brought under improved low-emission and/or climate-resilient management practice	The indicator will be informed by two (mid-term and final) independent surveys commissioned by the project to external consultants.	0	31,686 ha	104,565 ha (Annex 23)	There is relative political stability in the area. The GOI provides all clearances and approvals for canal works in a timely manner. It is estimated that 104,565 hectares of farming area will be brought under climate-resilient management practices according to the following assumptions. (i) Area covered by the open canals transform to covered canals: 6,515 ha; (ii) Areas benefitting from solar systems:1,415 ha; (iii) 60% of the 10,000 Farmer Field School participants adopts the new climate resilient practices on 3 hectares of land on average: 18,000 ha; (iv) Each of the 30,000 farmers who have learned of a CRA indirectly implement the practice or technology on 1 hectare of land; (v) It is estimated that 60% of the 40,500 women who have been reached by the CWW will adopt the CRA on 2 hectares of land on average: 48,600 ha

ARA2 Health, well-being, food and water security	Supplementary 2.3: Beneficiaries (female/male) with more climate-resilient water security	Independent evaluations (midterm and final); external third parties' surveys	Karbala: 28.9%, Muthanna 22% and Najaf 10.3%.[117]	8.126 people benefitting from improved irrigation systems of whom 4,038 are women.	16,775 people benefitting from improved irrigation systems of whom 8337 are women.	Beneficiaries benefit from improved climate-resilient water security provided by improved canals and solar systems in component 1 (see Annex 23).
ARA2 Health, well-being, food and water security	Supplementary 2.5: Beneficiaries (female/male) adopting innovations that stregthen climate change resilience	Independent evaluations (midterm and final); external third parties' surveys	0	0	6,000 farming households (40,789 people 20,261 women)	Farming Households benefiting from the farmer field schools in Component 2, assuming a 60% adoption rate.
ARA3 Intrastructure and built environment	Core 3: Value of physical assets made more resilient to the effects of climate change and/or more able to reduce GHG emissions	The indicator will be informed by two (mid-term and final) independent surveys commissioned by the project to external consultants.	Current value of canals: 1,611,000 USD	7 canals valued at USD 13 million.	13 canals valued at USD 24 million (Annex 23)	There is relative political stability in the area. The GOI provides all clearances and approvals for canal works in a timely manner. The cost of irrigation scheme has been calculated based on a cost of USD 18,750 per km of the distributary and the inclusion of 3 pumps (USD 15,000), 7 gates (USD 21,000), head-regulators (USD 300,000). The total current value corresponds to 1,611,000. Added with the investments foreseen for the transformation of the canals of USD 22,699,870, the total value of the canals at final evaluation will be USD 24,310,870
MRA1 Energy generation and access	Core 1: GHG emissions reduced, avoided or removed/sequestered	Annual carbon accounting prepared by the project using the FAO Ex-Ante tool. Independent evaluations (mid-term and final) Reports generated with installed monitoring equipment	0	1,026 tCO2eq	20,520 CO2eq	The GOI provides all clearances and approvals for the installation in a timely manner. The installation and proper functioning will be assessed and certified by an independent third party that will be recruited by the project with an international bid. The PV systems installed on water canals will deliver an estimated 1,460 MWh per year electricity to run water pumps. The expected emission reductions over 20 years have been estimated considering an emission factor of the electricity of 0.684 kg CO2/kWh[118] Emission reductions will be monitored by the project annually. Mid-term and final carbon accounting will be
	Supplementary 1.3: Installed renewable energy capacity	Project Report External third-party Inspection after works completion, at midterm	0	1MWp	1MWp	

		and at the final evaluation.				executed by an independent third party that will be recruited internationally via a bid.

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

Core Indicator	Baseline context (description)	Rating for current state (baseline)	Target scenario (description)	How the project will contribute	Coverage
Core Indicator 5: Degree to which GCF investments contribute to strengthening institutional and regulatory frameworks for low emission climate-resilient development pathways in a country-driven manner	The existing policy frameworks and strategies for water management and energy lacks systematic analysis of sustainable and integrated natural resources management and is not equipped to address the growing demands of water, energy or cope with the recurrent and increasingly impacting climate risks	low	Climate resilient planning of water and energy is scaled-up into key national policy frameworks and mainstreamed across key stakeholders. This will enhance participatory and climate adaptive water allocation and management and increase investment planning in solar rural electrification.	A draft strategy on water allocation and a road map for rural electrification will be developed by the project. The project will also strengthen the technical capacity in the country for WUAs, extension staff, vocational institutes and women extension agents.	National level (one country)
Core Indicator 6: Degree to which GCF investments contribute to technology deployment, dissemination, development or transfer and innovation	Natural resource management is inefficient due to obsolete irrigation and electricity infrastructure that led to wastage in water use and unstable and polluting energy supply with adverse impacts on water availability at the farm gate	low	Agriculture stakeholders in project areas (e.g. farmers, DoWR and WUA) have access to technologies allowing the application of CRA practices and dispose of more efficient water conveyance due to closed irrigation systems and sustainable and reliable low electricity with multiple environmental benefits	The project will finance the rehabilitation of obsolete irrigation systems in project areas and provide for the installation of the first solar systems installed on water canals in the country. In addition, FFS-related CRA activities are also contributing to technology deployment and diffusion	National level (one country)
Core indicator 8: Degree to which GCF investments contribute to effective knowledge generation and learning processes, and use of good practices, methodologies and standards	Farmers and extension officers are lacking the knowledge to increase and stabilize water availability at the farm gate level; to optimize agricultural water productivity. These issues, among other, contribute to the high adaptation deficit of agriculture's stakeholders in project areas.	low	Farming households and extension officers will have access to enhanced climate adaptive knowledge through different sources: Strengthened public sector extension service, ICT4CC and tailored training and capacity development processes that can be independently updated beyond the lifetime of the project.	110,000 farming households will be trained on enhanced climate adaptive practices and technologies which they will further disseminate to others.	Multiple sub-national areas within a country

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

			Baseline	Target	Assumptions / Note

Project/programme results (outcomes/ outputs)	Project/programme specific Indicator	Means of Verification (MoV)		Mid-term	Final	
Outcome 1: Increased water availability for women and men farmers	% conveyance efficiency	Data records of MOWR. External and independent analysis	68%	86% 95%	86% 95%	Necessary governmental approval process concluded without delay. There is no increase in over-use of river water by upper riparian countries. Detailed feasibility studies and works completed without any major delays. Installed systems are maintained and operated in efficient manner. Current conveyance efficiency is 72%. Multiplied with the operation efficiency of 95%, the actual current conveyance efficiency is 68%. Future actual conveyance efficiency can be increased to (i) 86% for the sites where distributary canals with their water courses are targeted by the upgrades; and to (ii) 95% for the sites where only distributary canals are targeted by the upgrades. (see Appendix 19 of Annex 2)
	% Crop intensity in project areas	National Statistics and PMU/FAO reports and use of sampling methods. External and independent analysis	50%	80%	110%	Necessary governmental approval process concluded without delay. Detailed feasibility studies and works completed without any major delays Installed systems are maintained and operated in efficient manner. At midterm and at the end of the project an independent and external team of experts will measure changes and assess increases. The external and independent analysis will be secured via an international bid. Crop Intensity (Gross Cropped Area/Net Sown Area, in a given agricultural year on the same field) will be measured annually by the project via tailored surveys in target areas as well as with remote sensing technologies using harmonized Landsat-8 and Sentinel-2 data. According to the information retrieved from MoA the farmers are watering currently only 50% of the areas.
	% of individual water outlets regulated with prepaid water meters	Reports from MoWR	0%	60%	100%	Awareness campaigns carried out to increase acceptance of the final consumers
Output 1.1.1: Open canals shifted from open to closed systems benefiting 8,457 people	Length of canal upgraded	Project records Reports from Independent and external experts Annual Performance Reports by DoWR	0	40 km	68 km	Necessary governmental approval process concluded without delay Detailed feasibility studies and works completed without any major delays

Output 1.2.1: Water canals covered with solar panels, providing 1,000 kW of renewable energy	kWp of solar energy produced to pump water	Performance report of solar systems generated with installed monitoring equipment Independent Expert evaluation O&M Report from DoWR	0	1,460 MWh/a	1,460 MWh/a	Detailed feasibility studies and installations completed without any major delays PV systems with a total capacity of 1 MWp installed in target areas will produce approximately 1,460 MWh/a. Water pumps functioning and working throughout the year
	# of staff capacitated to carry out operation and maintenance of solar systems by gender	Attendance sheets training Expert evaluation O&M Reports from the DoWR	0	10 staff (at least 30%Women)	15 staff (at least 30%Women)	Low turnover of dedicated staff Training will involve the entire corpus of employees dedicated to the functioning of the irrigation pumps needed to convey water from the primary canals to all the others.
Output 1.3.1: 500 technical staff trained in design, installation and maintenance of irrigation, drainage and energy technologies	# of Technicians (disaggregated by gender) trained	Official publications from partnering schools reporting the use of the new curricula	0	0	500 technicians (25% women)	New modules integrated into the curricula for agricultural and vocational schools and technical institutes as indicated by the official documents of the ministry of Education informing about the introduction of the new curricula Schools have the capacity to modify the course content and are interested in offering the courses and students are interested in participation. The project will sign a MoU with the Technical schools
Output 1.3.2: 15 WUAs supported in developing and adopting more efficient and climate sensitive water-distribution plans.	# of gender inclusive WUAs established and strengthened	Governmental records Official documentation by the WUA	0	10 WUA	15 WUA	Water users see advantages in terms of usage in WUAs The project will directly (M&E unit) monitor performances and governance changes of the WUAs throughout the project
Outcome 2: Increased adoption of practices and technologies to address climate risks	# of farmers (disaggregated by gender) implementing CRA practices and technologies	Reports from the extension officers facilitating the FFS. Reports from the extension officers and civil society organization involved in the CWW activities.	0	3,600 farmers (at least 30%Women)	3,600 farmers (at least 30%Women)	Farmers participate actively in training, see sufficient value to apply practices and have the means to carry out related investments. Climate trends remain homogenous during the time of the project and no major event strikes project areas At least 60% of involved farmers (10,000) manages to adopt and maintain CRA approaches and technologies. Adoption rate will be assessed via independent surveys that the project will commission to external parties via national bids.
	# of farms/home gardens with stabilized / increased production in project areas.			3,600 farms/home gardens	6,000 farms/home gardens	
Output 2.1.1: 400 Extension Staff trained on climate resilient agricultural practices and technologies to train	# of extension officers (disaggregated by gender) graduated in CRA practices and	Individual evaluations of the training process.	0	400 extension officers (at least 30%Women)	400 extension officers (at least	The Ministry of Agriculture provides all the facilities for the training of its personnel. Personnel is interested in attentively participating in the training.

10,000 farmers in adaptive practices and technologies	technologies from the training programs				30%Women)	Each trained technician will have to take a test to verify the new knowledge acquired. Tests will be administered and ranked by external evaluators selected among local academia and research centers.
Output 2.1.2: Enhanced capacity of 10,000 farmers in Climate Resilient Agriculture	# of farmers (disaggregated by gender) trained on CRA practices and technologies	Reports from the extension officers in charge of implementing the FFS, Reports from MoWR and from the MoA	0	10,000 farmers (at least 30%Women)	10,000 farmers (at least 30%Women)	Farmers maintain their interest in learning about CRA
	Changes (+) in percent of irrigation efficiency	Information and data collected in farmers' fields by the FFS facilitators (extension officers' team) Independent surveys at mid-term and terminal evaluations	60%	--	75%	Surveys will be commissioned by the project to external and independent companies at mid-term and termination of the project. 75% irrigation efficiency is typical efficiency from FAO field studies with sprinkler irrigation 10% wheat yield increase estimation at project ending obtained carrying out modelling with the AquaCrop tool (FAO)
	Changes (+) in percent in wheat yields (kg/ha)		Karbala: 3.853 kg/ha Al-Najaf: 2.933 kg/ha Al-Muthnna: 2.442 kg/ha [119]	--	10% more	
Output 2.1.3: 100,000 farmers reached through ICT4CC technologies	# of farming households reached through ICT4CC	Independent surveys at mid-term and terminal evaluations Statistics from websites/applications used for activity	0	40,000 farming households	100,000 farming households	Surveys will be commissioned by the project to external and independent companies at mid-term and termination of the project. The Ministry of Agriculture provides all the facilities to host the platform ICT4CC.
Output 2.2.1: Technical Capacities of 90 stakeholders and knowledge of 12,000 citizens on solar energy increased through trainings and awareness raising events	# of experts (disaggregated by gender) certified on Solar powered irrigation systems	Reports/Documentation from the organization in charge of the trainings Independent surveys at mid-term and termination of the project.	0	40 experts farmers (at least 30%Women)	90 experts farmers (at least 30%Women)	Line ministries and local administration will support the dissemination of the training opportunities and the identification of participants
	# of citizens sensitized on Solar Energy by gender		0	6,000 citizens	12,000 citizens	The independent surveys will assess key parameters such as number of people reached and level of knowledge reached based on sample evaluation trough questionnaires Municipalities in target areas are willing to host events and to contribute to organization
Output 2.3.1: A cadre of 150 Climate Wise Women (CWW) trained as change agents for climate adaptation	# of women certified by training courses	Reports/documentation of the organization in charge to carry out the training	0	150 women	150 women	Strong interest by Women to be trained and registered as CWW.
Output 2.3.2: 40,500 Women adopt for climate adaptive measures.	# of Persons adopt climate adaptive measures.	Reports/documentation of CWW and of the service provider in charge for organizing	0	40,500 women	40,500 women	150 Women are successfully trained in output 2.3.1 as CWW. Local population accepts to be trained/capacitated by CWW

		awareness raising activities • Knowledge surveys • experts' evaluation				
Outcome 3: Policy environment for efficient water and energy management is enabled	# of crops prohibited from being cultivated compared to the reference period (2016-2021).	Data records of MoWR/MoA	3 crops	3 crops	1 crop	Governmental institutions are open to change and collaborate actively in data and information exchange.
	# Increased installation of solar panels in rural areas.	Reports from MoE and Chambers of Commerce	Several large-scale projects at the planning/ permitting stage[120] Najaf: 5 MWp Muthanna: 750 MWp Karbala: 300 MWp	+10%	+20%	National Policies for significantly increasing Solar Energy are continued and corresponding policies implemented Solar energy remains national priority activity for rural electrification The M&E unit of the project will collect data and documents related to solar panels and their installation in project areas on an annual basis. Data will be disaggregated by gender.
Output 3.1.1.: A climate resilient water allocation strategy and its action/legal/coordination plan developed	Climate resilient water allocation strategy is validated	Formal endorsement from stakeholders via participative workshop. Governmental reports (e.g. Gazette)	0	0	1	Ministries are actively participating in activities and collaborate for successful implementation and information sharing The project will sign MoUs with each Ministry
Output 3.1.2: Improved national compliance practices for management of irrigation water supply	Action plan developed, discussed and validated with stakeholders	Formal endorsement from stakeholders via participative workshop. Governmental reports (e.g. Gazette)	0	0	1	
Output 3.2.1: Enhanced planning for solar rural electrification	Road map for solar rural electrification developed, discussed and validated with stakeholders	Formal endorsement from stakeholders via participative workshop Governmental reports (e.g. Gazette)	0	1	1	
	# of private sector stakeholders sensitized on awareness on solar energy opportunities	Formal endorsement from stakeholders via participative workshopGovernmental reports (e.g. Gazette)	0	20 stakeholders	30 stakeholders	Companies and banking sector are interested in being involved in implementation of the road map. The project will target registered companies in collaboration with the Ministries and the Chamber of Commerce. Companies will be assessed at inception and monitored throughout the project. The project will monitor changes in the technologies offered in the field of solar energy

	# of Ministries collaborating in elaboration and implementation of road map	Formal endorsement from stakeholders via participative workshop	0	4 Ministries	4 Ministries	MoU signed between participating Ministries in the first year of the project.
Project co-benefit indicators						
Co-benefit 1: Increase in ancillary jobs.	# new jobs related to piped systems created in the water sector and solar energy	Independent expert market survey	75,000[121]	0%	2%	Increased demand for covered irrigation pipes, solar power and their maintenance. Resilience and opportunities of agriculture and energy sectors will create job opportunities for youth
Co-benefit 2: Crop diversification	Changes in crop production	Governmental statistics Independent survey	Farmers in project areas produces an average of 2 crops per year[122]	20% of the farmers are growing new climate resilient crops	30% of the farmers are growing new climate resilient crops.	Via the extension officers and the M&E unit of the project, beneficiaries will be surveyed to understand changes in their cropping strategies, practices and productions. Diversification is expected as a resultant of improved access to water, adoption of CRA and improved irrigation practices. The combination of these will allow farmers to expand production strategies to multiple crops without increasing their water footprint.
Co-benefit 3: Acceptance of role of women in the water user associations	# number of women in leading roles in WUAs.	Project reports Official documents of the WuAs	0	5	5	Independent experts survey will retrieve information through interviews with representatives from water User Associations and local administration to obtain information related to the role of women in decision making and to estimate the changes at MTR related to project start up and at Final evaluation related to MTR. It is expected that these women will be increasingly involved in decision making and will at the same time by example also motivate other women to be actively involved in decision making.
Co-benefit 4: GHG reduction through CRA	GHG emissions reduced and sequestered through climate resilient agriculture activities	NEXT tool reports Independent evaluations (midterm and final); external third parties' surveys	153,921 tCO2eq per year	-198,243 tCO2eq	-1,321,618 tCO2eq.	The project will lead to an improvement of agricultural practices related to barley, wheat and rice. In the target governorates there are 35,049 farmers cultivating these crops on a surface of 246,460 hectares. It can be assumed that the Farmer Field Schools (FFS), implemented by SRV-ALI within component 2, will reach a number of 10,000 of these farmers cultivating in total 53,854 ha. It is further assumed that due to the capacity development activities, 60% of these hectares (13% of the total land), or 32,312 ha, will adopt as a consequence good agricultural practice with a significant mitigation impact. Baseline calculated using FAO NEXT Carbon Accounting Tool.
E.6. Project/programme activities and deliverables						
Component 1: Strengthening resilience against climate induced water scarcity						
Sub-Component 1.1: Investments in irrigation canals upgrading						

Output 1.1.1 Open canals shifted from open to closed systems benefiting 8,457 people			
Activities	**Description**	**Sub-activities**	**Deliverables**
1.1.1.1 Engineering design	Prepare engineering designs, bills of quantities, cost estimates and tender/procurement documents (consulting services). In close collaboration with all concerned stakeholders (i.e. government agencies and water users), undertake feasibility studies and prioritize irrigation water control and systems for the fast tracking of repair, rehabilitation and construction works	• Draft ToRs for consulting firm to conduct the detailed technical studies, Conduct the bidding process to select the consulting firm to do the job • Prepare detailed design and biding document • Approve the studies by the contracting authority	• A descriptive report: this report must explain and justify all the choices and decisions taken for the execution of the studies and the evaluation of the cost of all the works • A calculation note: this note must contain all the project calculations (hydraulics, stability, etc.) • A file for execution plans: The file must contain all plans, profiles and diagrams specifying the work to be carried out • A file containing all the topographic surveys carried out • A file containing all the data and results of the geotechnical studies as needed.
1.1.1.2 Construction supervision	Provide services for control and supervision of construction works	• Assist the contracting authority in conducting the process for construction works award • Assist the contracting authority for the control and supervision of construction works.	• Tender tender/procurement documents • Periodic reports (weekly, monthly, site meeting minutes, and reception report) according to the progress of the work and based on the contractual agreement.
1.1.1.3 Construction works	Implement the planned changes to the selected irrigation canals (works). Repair, rehabilitate and construct selected irrigation infrastructure through MoWR approved contractors. Labor-intensive activities, utilizing local labor inputs as much as practicable, are encouraged. The period of canal closure for construction will be agreed with water uses to cause the least disruption in water supply.	• Conduct the bidding process to hire a firm or firms for the construction works • Execute the construction contract(s) under the supervision and control of the consulting firm • Prepare the manual of operation and maintenance of the implemented infrastructure • Proceed by the reception of the construction works by the contracting authority.	• Construction works completed as per the contractual agreement specifications (50 kms of distributary canals and their watercourses shifted from open to closed pipeline system)
1.1.1.4 Operation and maintenance	Water User Associations will be involved throughout the whole process in the selected Governorates for the operation and management of the improved systems. After the establishment of WUAs, it is the intention of government that these systems will be managed by these WUAs. The responsibilities for operation and maintenance of the irrigation and drainage infrastructure would be transferred gradually to the WUAs. Arrangements, such as a scheme management code and training, will need to be put in place between the responsible Government irrigation structure (DoWR) and the	• Operation and Maintenance Manual • Scheme management code • Water allocation modalities for the targeted schemes	• Future management of the upgraded system will be put in the hands of the WUAs.

	WUAs. The rehabilitation (upgrade) will also include a review of the water allocation modalities for the targeted schemes. The consulting firm will establish as part of the detailed design elements necessary to guarantee a good operation and maintenance of the targeted irrigation schemes. At the end of the construction phase, an Operation and Maintenance Manual should be prepared by the consulting firm when all the elements of the equipment actually supplied will be known, including the instructions of the equipment suppliers.		
1.1.1.5 Technical support and oversight	To provide technical support to the PMU, the project will hire a highly qualified irrigation expert and an environmental, an energy expert, a social safeguards specialist and a procurement specialist to support the process and the execution of all technical activities.	• Hire Technical expertise, baseline and final survey	• ToRs. • Supervision and monitoring reports
Sub-Component 1.2: Investments in Renewable Energy Systems			
Output 1.2.1 Water canals covered with solar panels, providing 1,000 kW of renewable energy			
Activity	**Description**	**Sub-activities**	**Deliverables**
1.2.1.1 Engineering design	Prepare engineering designs, bills of quantities, cost estimates and tender/procurement documents (consulting services). In close collaboration with all concerned stakeholders (i.e. government agencies and water users), undertake feasibility studies and prioritize irrigation water control and systems for the fast tracking of repair, rehabilitation and construction works	• Draft ToRs and conduct the bidding process to select the consulting firm for detailed design • Prepare and validate tender documents, including detailed design and engineering of the PV systems.	• A descriptive report: this report must explain and justify all the choices and decisions taken for the execution of the studies and the evaluation of the cost of all the works and supplies • A calculation note: this note must contain all the project calculations • A file for execution plans: The file must contain all plans, profiles and diagrams specifying the works to be carried out; • A file containing all the technical feasibility studies for the execution of the works
1.2.1.2 Construction supervision	Provide services for control and supervision of construction works	• Assist the contracting authority in conducting the process for construction works award • Assist the contracting authority for the control and supervision of construction works.	• Tender tender/procurement documents • Periodic reports (weekly, monthly, site meeting minutes, and reception report) according to the progress of the work and based on the contractual agreement.
1.2.1.3 Installation of solar systems	Implement the planned changes to the selected sites (works).	• Execute civil works and supplies including, testing, commissioning and start-up of the PV systems in coordination with the corresponding DoWR in each Governorate	• Construction and installation completed as per the contractual agreement specifications • 1 Operation and maintenance manual

		• Prepare the manual of operation and maintenance of the implemented infrastructure, with detailed instructions about the steps to be carried out to guarantee a smooth functioning of the installation • Proceed by the reception of the construction works and supplies by the contracting authority.	
1.2.1.4 Operation and maintenance of Solar Systems	The DoWR in each Governorate will be responsible for the operation and maintenance of all investments after handing over. The Water User Associations will be involved in all related capacity development activities.	• Handing-Over of Projects to the respective DoWR • Operation and maintenance by DoWR staff with support from the construction firm (establishing guidelines to monitor the performance, including effects of the solar panels on evaporation, algae growth etc. and training of DoWR staff on operation and maintenance). During the first year the maintenance will be carried out by the construction company, which will at the same time train the staff and provide for this purpose the O&M manual	• Operation and maintenance by DoWR staff with involvement of WUA and installation company • 1 performance evaluation report per year
Sub-Component 1.3: Investments in knowledge transfer, behaviour change and training			
Output 1.3.1 500 technical staff trained in design, installation and maintenance of irrigation, drainage and energy technologies			
Activity	**Description**	**Sub-activities**	**Deliverables**
1.3.1.1 Capacity development of technical staff	Capacity building will be approached in three stages: holistic assessment to define the needs, design and implement a multiyear extensive capacity development program targeting the change agents, and ensure the transfer and application of the knowledge acquired through this process. The training workshops are intended to enhance local capacity on how to design, install and maintain proposed technologies. Priority will be given to beneficiaries from target areas. Nonetheless, the project will include in the training interested candidate from the entire country from the MoWR, MoA, IME and MoE.	• Draft the TORs for the TA to conduct training sessions for the benefit of technical staff • Engage the TA (consulting firm) (procurement process) • Carry out an assessment to define the needs, design and implement a multiyear extensive capacity development program targeting the change agents, and ensure the transfer and application of the knowledge acquired through this process • Conduct the training sessions • Evaluate the training sessions and define the way forward beyond the project lifecycle.	• 500 technicians trained in design, installation and maintenance of irrigation, drainage and energy technologies
1.3.1.2 Update vocational schools and technical institutes' curricula	A first package of activities that foresees the creation of special module to be integrated in the curricula of agricultural vocational schools and the technical institutes informing about the advantages and possibilities for solar energy in agricultural production and informing about the advantages and possibilities for water savings technologies including solar energy applications to that end	• Draft the TORs for the TA to develop a new module • Engage the TA (consulting firm) (procurement process) • Conduct consultation meeting and workshops at local and national levels to assess the needs and define the elements to include in the new module • Elaborate a new module and its dissemination strategy • Validate the prepared module and its dissemination strategy in a national workshop • Train teachers from vocational schools and technical institutes in the integration of developed module.	• Develop a module to be integrated in the curricula for agricultural vocational schools and the technical institutes and its dissemination strategy • 30 teachers from agricultural vocational schools and technical institutes trained in the integration of developed module.

Output 1.3.2 15 WUAs supported in developing and adopting more efficient and climate sensitive water-distribution plans			
1.3.2.1 Establish and support WUAs in the selected project areas	The project will work closely with the WUA section within both ministries (MoWR and MoA) to mobilize actions and complete the procurement and logistical preparations for establishing and/or reinforcing the capacities of WUAs in the selected project areas. A Technical Assistance (TA) will be engaged through a competitive bidding process to help assess the legal framework in which WUAs operate in Iraq and define and/or clarify the management rules for irrigation schemes in the targeted governorates. Based on this first step, the TA will also work at national level for supporting the preparation of an appropriate legal framework for irrigation management by the WUAs within the framework of the existing Water Code. The TA mission will also define the level of support needed at each WUA to insure implementation and respect of the scheme management code and the rules of procedures.	• Draft ToRs for the TA • Engage the TA (consulting firm) (procurement process) • Conduct assessment of the legal framework in which WUAs operate in Iraq, and define and/or clarify the management rules for irrigation schemes in the targeted governorates • Update the legal framework for irrigation management by the WUAs within the framework of the existing Water Code • Establish additional WUAs • Assess and define the support, with block grants to each WUA, for improvements of their facilities (buildings, equipment, etc.) • Provide support and follow up to ensure that the defined improvement is implemented accordingly.	• 15 WUAs are established and have their capacity reinforced • Situational analysis for women's role in irrigation water management
1.3.2.2 Reinforce WUA members' technical and managerial capabilities	The TA mission will also include organizing and conducting training in good practices/technical and irrigation scheduling with targets and outreach measures to ensure participation of female farmers around the three defined modules: i) Developing and adopting water-distribution plans based on crops requirements and climate change projections; (ii) minimizing degradation of water quality in the surface and ground water through improved agriculture and irrigation practices; and (iii) managing, operating and maintaining irrigation schemes.	• Organize and conduct training sessions around the three defined modules • Enhance technical capacities of WUAs and stakeholders on solar powered irrigation systems	• 30 representatives of WUA trained in good practices/technical and irrigation scheduling
Component 2: Climate Resilient Agriculture Production			
Sub-Component 2.1: Strengthening Adaptive Capacity of Farmers			
Output 2.1.1 400 Extension Staff trained on climate resilient agricultural practices and technologies to train 10,000 farmers in adaptive practices and technologies			
Activity	**Description**	**Sub-activities**	**Deliverables**
2.1.1.1 Technical coordination and oversight	To provide technical support to the PMU, the project will hire highly qualified staff to support the implementation of the output and all technical activities.	• Hire technical expertise, professional/contracting services and mobility	• ToRs. • Supervision and monitoring reports

2.1.1.2: Develop training curricula to support the adoption of CRA.	This set of activities is designed to put in place arrangements for implementing a training programme for CRA.	• Hire a CRA expert to review the pre-identified training curricula (6 months). • Collect existing training materials from the FFS and trainings with FAO, IFAD and WFP help. • Organize a technical workshop, including national and local institutions, to validate the reviewed content. • Organize a stakeholder workshop to validate the training content, linguistic and include farmer's suggestions. • Hire a national expert in communication for development to review the proposed training material and to include training aids specially designed for adults (3 months). • Develop training manuals for trainers and farmers. • Printing and dissemination of training manuals.	• A technical report that will include the training curricula detailed description, based on local needs and conditions. • Report including the recommendations obtained during the technical workshop. • Report including recommendations coming from the stakeholder workshop. • Final version of the training materials ready for printing • Two sets of training materials ready for use.
2.1.1.3: Train the master trainers who will conduct the training address to the extensionist team.	Develop a team of Master Trainers for CRA	• Select a group of at least 12 master trainers (3 working at national level and 3 per governorate) who will conduct the training process for the extensionists. The master trainers could be staff members from the national extension service or hired experts. • Define a plan for the training of master trainers, including dates, location, and logistics. • Organize a workshop to train the master trainers.	• 12 Master Trainers trained and deployed for the training of extension staff.
2.1.1.4: Conduct the training of extension service staff	Put in place the arrangements for training of extension staff.	• Identify 400 field extensionists, including women staff, who will lead the training process addressed to farmers. • Define a plan for the extensionists' trainings. This plan should include dates, location, logistics, facilities, and use of training materials. • Organize the 16 workshops to train the extensionists team by the Master Trainers.	• A training plan for extension staff with candidates identified for the training and 400 staff trained.
Output 2.1.2: Enhanced capacity of 10,000 farmers in Climate Resilient Agriculture			
2.1.2.1: Set-up the farmer field schools for training local farmers	This activity will allow the organization of at least 400 groups of farmers interested in implementing CRA. Each group will consist of a maximum of 25 producers.	• Disseminate the training curricula among the farmers of each governorate. • Create a list of farmers interested in participating in the training process. • Establish groups of a maximum of 25 participants who will form an FFS based on common topics of interest, and territorial proximity and gender considerations.	• 10,000 farmers trained in FFS with 30% women.
2.1.2.2: Set up 400 project demonstration farms or plots to validate the benefits of the selected CRA practices and technologies.	Designed to disseminate the good CRA practices learnt at the FFS.	• Agree selection criteria for locations (farmers' production units) to establish demonstration sites for the CRA practices and technologies set by each FFS. • Select the specific locations for each FFS (demonstration plots). • Procure the agricultural materials and inputs needed for the implementation of all demonstration farms / plots.	• 400 project demonstration farms or plots.

		• Implement the CRA practices and technologies (agreed under activity 2.1.1), in each demonstration plot, in coordination with the farmer-owner of each demonstration plot. • Carry out the training program according to the scheduled lessons, field days, and activities planned individually in each FFS.	
Output 2.1.3. 100,000 farmers reached through ICT4CC technologies			
2.1.3.1. Enhance awareness of climate resilient agricultural practices through ICT	The project will hire a national expert who will be responsible for preparing a rapid assessment of the use of ICT in the agricultural sector and based on this analysis, will develop an ICT4CC action plan that will articulate the actions proposed in the project with ongoing government initiatives and those of other development partners.	• Hire a national ICT • Develop a rapid assessment of the use of ICT options in the Iraqi agriculture sector • Develop an ICT4CC action plan that will articulate the project's efforts with major ongoing ITC initiatives. • Develop information and communication services and products that enable farmers to adopt climate resilient practices and technologies. • Maintain active the different ICT options chosen and agreed in the ICT4CC action plan \with the focal points of the Ministry of Agriculture. • Disseminate the training activities conducted in the demonstration farms and plots among the farmers of the project area and at a national level.	• A technical report containing an assessment of the ICT in the Iraqi agriculture sector. • The project ICT4CC action plan. • A set of ICT services operating on a regular basis to provide farmers with weather information for farmers.
Sub–Component 2.2. Enhancing Awareness about Renewable Energy Applications for agriculture			
Output 2.2.1: Technical Capacities of 90 stakeholders and knowledge of 12,000 citizens on solar energy increased through trainings and awareness raising events			
Activity	**Description**	**Sub-activities**	**Deliverables**
2.2.1.1 Enhance Technical Capacities of extensionists and other stakeholders on Solar energy for agriculture	Organize training workshops for stakeholders on technical and economic advantages and feasibility of the Solar Powered Irrigation systems (SPIS). The training addresses the topics planning, installation, supply, operation, and maintenance and also the financing of the systems.	• Hire an international SPIS expert and a national SPIS expert to define in detail activities • Organize a technical workshop, including national and local institutions, to validate the proposed content • Organize a mobile demonstration lab • Install 3 complete Solar Powered irrigation demonstration systems (1 in each governorate) on communal land that include all equipment for the PV – systems and the drip lines • Identify participants for the trainings • Organize 2 trainings in each of the governorates (6 in total)	• 6 training events (2 per governorate) • 1 mobile training lab created • 1 validation workshop awareness • awareness raising material produced • 1 guideline for solar powered irrigation systems elaborated
2.2.1.2 Increase awareness of the population on the advantages and opportunities of solar energy	To increase awareness of the general public on the technology, each year (from Y2-Y5) in a different municipality of each beneficiary governorate 1 public event demonstrating the functionality and advantages of solar energy in rural areas will be organized.	• Hire a national expert in communication • Hire a national energy expert • Preparation of communication materials • Organize 12 open energy days (4 in each governorate)	• 12 open energy days for awareness raising conducted (4 per governorate) • Dissemination and awareness raising material

Sub-Component 2.3: Enhancing Climate Resilience for Women			
Output 2.3.1: A cadre of Climate Wise Women (CWW) trained as change agents for climate adaptation			
Activity	**Description**	**Sub-activities**	**Deliverables**
2.3.1.1 Technical Assistance for Climate Wise Women	Technical assistance will be procured for development of a short-course for training of climate wise-women as change agents.	• Develop ToR for hiring an international expert on gender and climate adaptive agriculture, and a national training specialist, to conduct a rapid needs assessment, review available training curricula and materials and develop two training courses: (i) Training for master trainers of Climate Wise Women and (ii) the training course for Climate Wise Women. • Hire national and international experts for the development of the master trainer's course (7 weeks) and Climate Wise Women training courses (12 weeks) • Design needs assessment (methodology, instrument, sample size) to assess validity of selection criteria, appropriate methodology, content, duration and timing of training as well as finalize kit to be delivered to Climate Wise Women.	• International and National Experts Hired • Training Needs Assessment Designed
2.3.1.2 Develop Social and Behaviour Change Communication Strategy (SBCC) for Climate Wise Women	A Social and Behaviour Change Communication Strategy will be developed for branding, positioning and specifying slogans and behaviour change products for CWW	• Develop ToR for hiring a SBCC specialist • Hire international expert to develop the SBCC • Draft SBCC for Climate Wise Women • Hire service provider to design and printing communication material • Implement SBCC activities through specified channels	• SBCC implemented
2.3.1.3 Designing Training Modules for Master Trainers and Climate Wise Women	A service provider will be hired to conduct the training needs assessment and based on it training manuals will be designed for Master Trainers and Climate Wise Women.	• Develop ToR for hiring a service provider to conduct the needs assessment for the modules to be developed for Climate Wise Women. • Conduct training needs assessment in the target area of the project in Kerbela, Najaf and Muthanna. • Design training for master trainers and Climate Wise Women specifying contents of kits to be provided to master trainers and Climate Wise Women. Organize 4-6 two-day peer review workshops to vet the 12 modules developed for Climate Wise Women. • Field test training for Climate Wise Women through holding a workshop (15 rural women selected using the criteria identified for CWW • Revision of modules incorporating lessons learnt from field test • Organize a Validation workshop for CWW modules with the relevant technical experts from GOI and stakeholders • Develop ToR for service provider to design and print training manuals and materials	• Validated & Field-tested Manuals and Workshop material for Master Trainers & Climate Wise Women

		• Hire service provider to print manuals, training material, print manuals, training material	
2.3.1.4 Provide Training to Master Trainers	Master Trainers will be selected from pool nominated by Directorate of Agriculture and Centre of Training and Extension and trained	• Elicit nominations from the Directorate of Agriculture and Centre of Training and Extension for women Master Trainers • Interview and select 15 Master trainers (5 women Master trainers per Governorate) • Organize 7- week training of Master Trainers • Provide Master Trainers with kit	• 15 Master Trainers trained and provided kits
2.3.1.5 Select and train CWWs	Competitively selected candidates will be trained for a 12-week period in climate adaptation practices over the course of 18 months	• Develop a field plan for community mobilization and providing information on the application process for CWWs through master Trainers (12 days per Master Trainer in the field with each Master trainer responsible for visiting 5 villages at least twice) • Organize selection of CWWs (one per village) in each Governorate in accordance with specified criteria through a board comprising representatives from the Executing Agency, Government Extension Departments, Master Trainers etc. • Recruit selected candidates with contractual agreement specifying the obligation to complete the course, deliver training and support for climate resilient agriculture practices, awareness on climate change issues to women and men farmers and youth in their communities with a small monthly stipend. • Develop training plan for each Governorate with details of selected training venues (one per cluster of 25 villages), with dates and suitable timings, transportation arrangements for master trainers and Climate Wise Women, daycare facilities, refreshments. • Procure kits for Climate Wise Women • Deliver 2 training courses per Governorate (36 days in 12 three-day workshops each over 18 months) with 25 participants selected as Climate Wise Women in each course. The two courses in each Governorate will begin simultaneously with a team of two Master Trainers facilitating each course.	• 150 CWWs trained
Output 2.3.2. 40,500 Women adopt for climate adaptive measures			
2.3.2.1 Dissemination of climate resilient practices by CWW	The Climate Wise Women (CWW) will hold dialogues with groups of women in the communities to enhance their awareness about climate change and how best to cope with the risks associated with it and enhance their resilience.	• Develop field plan with Climate Wise Women for home visits to support climate resilient practices, advocacy on climate resilient practices with communities and social media campaigns on climate change with young women and men in the final week of their training • The 150 CWW conduct home visits and training sessions /dialogues in 4 to 6 village with 15 women in 3 sessions so that each cover 270 in repeat sessions). The Climate Wise Women will also use social media to lead dialogues on climate change	• 18 sessions conducted by each CWW with 15 women as participants in each session

		especially with young people and introduce them to modern climate adaptive agriculture. • Monitor CWW activities through monthly meetings in year 4, 5 and 6 with Master Trainers. In each Governorate, 5 trainers will monitoring 10 Climate Wise Women each.	
2.3.2.2 Organizing 3 multi-stakeholder Climate Wise Women Forums	The Climate Wise Women Forums will be organized in Year 3, 4 and 5 of the projects. These events will serve to highlight the role of women as change agents; identify achievements and challenges for climate adaptation at the community level for women, men and youth; provide feedback to the Government of Iraq on actions required at multiple levels to address climate change.	• Develop ToR for service provider to organize and document 3 multi-stakeholder Climate Wise Women forums • Hire Service Provider through competitive selection process • Organize three Climate Wise Women Forums in Year 4,5 and 6. • Produce reports on each CWW forum documenting process, learning and recommendations of CWW forums.	• 3 multi-stakeholder forums held and reports on forums produced
Component 3: Scaling-up climate adaptation through policy formulation and planning			
Sub-Component 3.1 Promotion of agriculture water policies and planning			
Output 3.1.1. A climate resilient water allocation strategy and its action/legal/coordination plan developed			
Activity	**Description**	**Sub-activities**	**Deliverables**
3.1.1.1 Conduct multi-stakeholder consultation meetings	This participatory consultation process will bring crosscutting sectors to take part in a whole government approach to foster climate adaptive water management practices to ensure the resilience of the agricultural sector without compromising the needs of the other sectors. The consultation process will address both aspects of policy coherence at horizontal and vertical levels related to water allocation within the framework of water-energy and food nexus.	• Draft ToRs for the TA • Engage the TA (consulting firm) (procurement process) to conduct the multi-stakeholder consulting process combining an analysis based on both descriptive and analytical work plus consultation workshops: • Perform a desk study on the relevant strategies and programs and their implementation modalities having an effect on the management and sustainable use of water resources • Conduct interviews with the institutional actors involved, both centrally and regionally, in order to identify the key interactions between the implementation modalities of the selected instruments and the priority arbitration needs • Collect data in the field, in the selected Governorates, in order to revisit or reaffirm the hypotheses and the first results emerging from the documentary study and from the interviews at the national level • Discuss the preliminary results of the analysis during a brainstorming workshop involving several stakeholders from both government and non-governmental organizations. The workshop would provide additional information relating to the issue of sectoral policy coherence and its effects on water use, as well as supplement the recommendations for the process to be initiated to strengthen convergence and minimize inconsistencies • Organize and facilitate multi-stakeholder consultation meetings. This participatory consultation process will bring crosscutting	• A climate resilient water allocation strategy and its action/legal/coordination plan developed

		sectors together for participation of key government players in fostering climate adaptive water management practices to ensure the resilience of the agricultural sector without compromising the needs of the other sectors • Draft a climate resilient water allocation strategy and its action/legal/coordination plan with clear guidelines about water allocation agreements and procedures, managing social conflicts around water, and its sustainable use in light of climate change • Organize and facilitate a workshop with all concerned stakeholders to validate the draft strategy.	
Output 3.1.2. Improved national compliance practices for management of irrigation water supply			
3.1.2.1 Analyse national compliance practices and the monitoring capacity.	The farmers' and other water-users' perspectives are a top priority in the desired shift to a service-oriented culture. The plan is to collaboratively identify the underlying core problems and establish new service-delivery performance targets for water users and service providers. Functions and responsibilities need to be defined and assigned to different actors. Agree on general objectives for the reform among actors and set performance objectives, and then define the functions needed to achieve these. Allocate responsibilities to the different actors	• Draft ToRs for the TA. • Engage the TA (consulting firm) (procurement process) to analysis and develop best-fit solutions for the three areas of performance: water service delivery, organizational resources, and governance. • Develop and agree on an action plan to achieve key targets informed by the consultations, reflections and problem analysis of the previous stages.	• Action plan laying out the way forward to address the bottlenecks to establish new service-delivery performance targets for water users and service providers.
3.1.2.2 Conduct knowledge exchange processes	The project will undertake actions to organize visits (for government staff and WUA representatives) for knowledge exchange to learn from neighboring MENA countries and national experiences to best plan manage and maintain irrigation water supply and drainage. Other forms of knowledge exchange encompass the organisation of webinars to address the bottleneck (pinged during the consultation workshops) based on the neighboring countries' experiences.	• Organize visits to exchange knowledge and learn from neighboring MENA countries and national experiences to best plan, manage and maintain irrigation water supply and drainage. • Organize webinars to address the bottleneck (pinged during activity 3.2.1.) based on the neighboring countries experiences.	• Knowledge exchange webinars and/or visits organized (4 webinars and 2 visits organized). • Beneficiaries of the knowledge exchange activities (100 participants)
Sub-Component 3.2. Support to solar energy policies implementation			
Output 3.2.1. Enhanced planning for solar rural electrification			
Activity	**Description**	**Sub-activities**	**Deliverables**
3.2.1.1 Develop a road map for solar rural electrification	In line with the provisions of the national energy plans, in particular, with the Integrated National Energy Strategy, that assigns to solar energy a key role for providing energy security in rural areas in short and medium term, the activity will focus on the elaboration of a road map for investments in the	• Initial review of the policy framework and strategies, needs, bottlenecks, and gaps • Mapping of stakeholders and private sector actors (e.g. services and tech providers)	• A road map for solar rural electrification developed • 1 Consultation Workshop • 1 Validation Workshop • 2 Implementation Workshops

	sector. The plan serves also to mobilize/leverage parts of the foreseen national investments from the private sector to achieve a 20% share of RES within the next decade. The plan contains clearly defined strategies and targets to be reached within the lifetime of the project and beyond, concerning market development, and anticipates learning curves of the different actors involved. Furthermore, an inventory of potential investments for the agricultural regions will be developed, together with a mapping and analysis for potential and sustainable exploitation. This analysis represents the basis for informed and sound decision making for public and private intervention. The road map contains the delineation of the policy framework, with a focus on rural households and the opportunity to utilize solar energy in off-grid, on grid and hybrid solutions, taking into consideration a development of the sector towards international best practice standards.	• Geospatial desktop analysis in combination with ground truthing indicating the potential for off-grid, on-grid and decentralized solar energy project development in support of rural electrification • Elaboration of a road map including financing strategy with exemplified solar energy projects • Stock taking of policy developments • Elaboration of investments possibilities • Organize and facilitate multi-stakeholder consultation meetings and workshops for the validation and implementation of the road map • Workshops for the banking/finance sector and the private sector on the opportunities for financing RES in rural areas.	• 1 Workshop for the Banking Sector and for the private sector

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

132. ***M&E Structure:*** A monitoring and evaluation system will be established for the project in keeping with the guidelines of GCF to report on its Integrated Results Management Framework designed to measure the core indicators as well as all other indicators identified in Section E. The PMU established in Najaf, Iraq will be responsible for monitoring of the project activities with the oversight of FAO-Iraq and technical back-stopping by the regional office where required. An M&E system will be developed with an M&E Officer and a Monitoring Information System (MIS) to keep track of performance and core indicators at the national and province level. All service contracts, Letters of Agreements and others with implementing partners will specify their responsibility with respect to sex-disaggregated data collection and reporting. The execution partners will submit reports to the PMU which will prepare a consolidated report on an annual basis. Regular meetings for monitoring and follow-up will be organized where problems will be discussed and, when needed, corrective measures will be recommended. FAO, as the main implementing agency will be responsible for maintaining records on all project activities in standard reporting formats. All implementing partners will be required to provide information on the core indicators, impact, outcome and output level indicators specified in the IRMF. FAO-HQ will support the PMU in reviewing and analyzing progress reports and to assess performances against baseline and targets. FAO will manage and coordinate reporting to the GCF according to its standards procedures. The project will further leverage its resources to equipe the local stakeholders to perform MRV functions, creating a lasting impact.

133. ***Types of Reports***: The PMU at the FAO office in Najaf, Iraq will formulate an annual work plan and budget based on the annual physical targets based on the implementation plan (Annex 5) which will be approved by FAO-Iraq and the Project Steering Committee (PSC). Reporting formats will be developed for each of the reports, namely the quarterly statistical and narrative reports and an Annual Performance Reports (APRs). These reports will be prepared by the technical staff at the PMU under the guidance of the M&E Specialist at the PMU. The key reports that will be submitted have been identified in the M&E Reporting Matrix given below together with their timelines and reporting responsibility (Table 25). More details are provided in Annex 11. The Annual Performance Reports (APRs) will document the progress towards achieving the indicators in GCF's IRMF and any additional project level indicators that have been selected for the project. APRs will also contain a narrative with updates on the progress of each output and outcome envisaged at the project level. The contracts with the service providers will specify their reporting responsibilities, the frequency of the reports to be produced and provide them with the formats to be used for reporting. All partners will be required to review the Gender Action Plan, which is an integral part of the proposal, and report on its implementation. All data will be disaggregated by sex to enable an assessment of the progress in inclusion of women in the project. The project will further leverage its resources to equip the local stakeholders to perform MRV functions, creating a lasting impact.

134. **MIS System**: An MIS system will be developed for the project to record key information of all beneficiaries. The M&E Unit in the PMU will coordinate and produce a consolidated MIS report for the project on an annual basis. Within the first quarter of the second year, when activities have been initiated and sufficient outreach has been achieved and the M&E data base begins to get populated, thematic maps will be generated by the project and will be monitored through consolidated remote sensing practices or geospatial analysis. This is expected to yield a better understanding of trends and patterns and make the analysis more meaningful in understanding the relationship between climate parameters and the pattern of adoption and participation in project activities. The MIS system will geo-reference all activities using FAO's Remote Sensing application- Earth Map. The MIS system will also record beneficiary phone numbers for feedback from participants. The MIS system will also be used for tracking beneficiaries over time and assessing impact.

135. ***Survey Methods:*** The project will construct a baseline using primary and secondary data against which subsequent changes and impact will be measured to confirm baseline indicators included in the project. . To measure attributable changes, the evaluations will draw on mixed-methods, using qualitative methods (e.g. participatory rural appraisal, focus group discussions, key informant interviews, etc.) and quantitative (e.g. site-scale survey). Information on some of the key GCF indicators like awareness about climate information, resilience to climate risks will be measured through specific questions on these elements. All surveys and assessments will be sex-disaggregated and key gender-sensitive indicators both quantitative and qualitative outlined in the Gender Action Plan will be captured in the initial and subsequent surveys and findings. In addition, all evaluations will be conducted by external parties to ensure that there is no bias in the findings.

136. ***Mid-term and final evaluations:*** To provide an external viewpoint on the progress of the project and the achievement of its objectives, and in line with the AMA signed with the GCF, two independent project evaluations will be conducted by FAO – interim and final evaluations. In line with the FAO policy on evaluations. They will be carried out by a team of independent external consultants. Both the mid-term and final evaluations must be consistent with GCF requirements as outlined in the GCF Evaluation Policy, Evaluation Standards, and Evaluation Operational Procedures and Guidelines. The project's studies and baseline survey will constitute important inputs for the interim and final evaluations. Baseline, Mid-term and Terminal Evaluation will be arranged in compliance with OED Evaluation Policy requirement with support from the RNE Regional Evaluation Coordinator.

137. **Beneficiary Feedback**: FAO will establish a mechanism for beneficiary feedback and demonstrate how they have incorporated the feedback in improving their implementation approach. The M&E staff of the PMU will undertake periodic

visits to the project areas to discuss with communities their views regarding project activities and to confirm their direct involvement during the site selection phases. The beneficiary feedback will also entail discussions with partners and executing entities about their experience with the project and the way partners engage with them during the implementation of the various components. The beneficiary feedback will be organized so that the reports provide sex-disaggregated perspectives. The PMU will also establish a grievance redress system which ensures confidentiality. FAO's Guidelines for Compliance Reviews will follow the procedures for Complaints Related to the Organization's Environmental and Social Standards.

138. **Learning and knowledge management:** The Project will synthesize the lessons that emerge from the Project in a separate section in the APRs, including lessons on some of the innovative aspects of the investments such as the conversion of the open irrigation systems to piped systems, installation of solar panels on canals, the impact of strengthened WUAs on the management of the irrigation system, the experience with Climate Wise Women, the impact of the change of the regulatory policy of water, the lessons from the experience with FFS and field days on improved resilience to climate risks, etc. A survey will be conducted to document the views of women on how they are impacted by climate change to develop a solid evidence base of how climate risks impact women. This document will be developed as a knowledge product for wider dissemination. These lessons will be shared with the MoE to enable them to incorporate them in the strategies and plans being developed by the country in its NAP and other key strategy documents. The outcome of the policy work on water allocation, compliance practices for water and rural energy road map will be especially highlighted as knowledge products. TAs working on specific topics and policy briefs will be required to develop knowledge products for wider dissemination. FAO will also capitalize on its in-house expertise to develop and disseminate knowledge products for wider circulation as a policy advocacy tool.

139. **Communication:** All the interventions, data and results generated by the project will be communicated and disseminated to different stakeholders and beneficiaries at the national and Governorate level. FAO will use its offices in Iraq and capitalize on its access to other forums in the country for wider dissemination. All the documents requiring multi-lingual support will be made available in Arabic and English.

Table 25 Types of report foreseen (See also FAA for reporting requirements to GCF)

Types of Reports	Reporting Timeline	Responsibility
Baseline Survey	Constructed using secondary data within the first six-months.	M&E Staff at PMU
Annual Work Plan and Budget	Two months prior to the start of the relevant PY	C/PMU
Inception Report	Within six months after the FAA effective date	PMU/FAO
Quarterly Statistical and Narrative Reports on physical and financial progress.	Two weeks after the end of the relevant quarter.	PMU/M&E Unit/FAO
Geospatial analysis through thematic maps.	Annual basis	PMU- M&E Unit/FAO
Annual Performance Report (APR)	One month after the end of the relevant PY	PMU- M&E Unit/FAO
Case studies to highlight the impact of the project on women especially the progress with respect to CWW.	Periodic	Gender Specialist PMU/FAO.
Policy notes and briefs to highlight the project progress with policy and regulatory reform for water and the road map for rural electrification.	On a periodic basis at each signficant point of reform	Techncial Assistance
Report on Co-financing in absolute numerical terms in accordance with the provisions of the relevant legal agreements between the AE and the GCF.	One month after the end of the relevant PY	Financial Specialist
Environmental & Social Safeguards Quarterly Report	Two weeks after the end of the relevant quarter	Environmental and Social Safegaurds Specialist
Beneficiary Feedback Analysis with both men and women.	On a regular basis at the completion of key project investments.	M&E Unit
Leaning and Knowledge Products	Periodically	TA/FAO
Independent Interim Evaluation Report	Year 4	Independent Third Party
Project Completion Report (Final APR)	Within six months from the completion date (Within six years after the Effective Date)	PMU/FAO
Independent Final Evaluation Report	Six months prior to end of the project in PY 6	Independent Third Party

F. RISK ASSESSMENT AND MANAGEMENT

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

Selected Risk Factor 1: Security

Category	Probability	Impact
Governance	High	Medium

Description

High security threat inhibits travel especially of UN and international staff who are subject to very stringent security requirements. The security measures that the international staff must abide by make movements difficult and increase the cost of travel and restrict the areas to which the team can have access. This is a major factor that impedes project performance. Security threats translate into a significant increase of project management costs compared to projects with more secure operating environments and are estimated at 18% of the operating costs of the project.

Mitigation Measure(s)

The United Nations Security Management System (UNSMS) enables the activities of UN organizations within acceptable levels of security risk. It is a framework that ensures the coordinated security management of the United Nations. At country level, Standard Operating Procedures (SOP) have been developed detailing requirements and procedures for UN official travel and movement within Iraq. The purpose of this SOP is to regulate the implementation of the travel related SRM measures. The Designated Area of Iraq is divided into seven SRM areas with varying security risk levels. All UNSMS personnel are required to implement risk management measures applicable to the respective SRM areas approved by the Security management Team which includes FAO. The SRM and its mitigation measures take into consideration all possible risks and FAO personnel abides to the agreed measures. Furthermore, the project is planning several strategies to avoid the high cost of security and travel by hiring a majority of local staff, use of public sector extension agents, competitively procuring service providers and through Letters of Agreement with local NGOs with a strong presence in the project Governorates for those activities which require strong field presence such as FFS, field days and working with CWW. In addition, to further mitigate risks and to ensure the sustainability of the project, activities will be implemented with the support of local authorities at governorates level, including extension staff from the relevant ministries. To this end, staff in the MoWR and the MoA will also facilitate and supervise the service providers during construction and implementation. The project is planning to hire local NGOs based in the project Governorates which have easy access to local communities and farming households. The public sector extension staff, local NGO staff and service providers are not subject to the same stringent travel security restrictions and will have greater access and outreach and lower operational and logistics. FAO will make use of its rich experience and lessons learned in the many projects implemented in difficult territories like Iraq and other countries to ensure that capacity of hired staff and service providers is adequate for the needs of the project. In addition, the project will establish the PMU office in Najaf which is in the Centre of the project Governorates. In addition to presented activities that will also reduce the main causes of disputes between people (e.g. access to water) Kindly note that in the project areas, we will also mainstream the context-sensitive programming approach through the programme clinic during the implementation. The aim is to:

- Familiarizing the staff, partners, and other relevant stakeholders with the contextual findings of the baseline.
- Complementing the findings with other relevant dispute/ disagreement drivers which might have not been revealed through the baseline.
- Assessing the impact of project activities on the development trends of the identified dispute/ disagreement drivers.
- Developing a list of recommendations for adjusting project activities that show the risk of affecting in a negative manner the identified dispute/ disagreement drivers.

Finally, hiring of all staff (national and international) will be subject to successful completion of the Safe and Secure Approaches in Field Environments (SSAFE) training for deployment to volatile and dangerous areas. The high-level training programme is designed to provide participants with a shared understanding of principles, guidelines, and policies to enhance their security awareness by providing them with the knowledge and skills required to prevent and respond to the various security incidents that they might encounter.

Selected Risk Factor 2: Governance

Category	Probability	Impact
Governance	High	Medium

Description

Iraq has been identified as a country with extreme fragility by most international development organizations working there. The country is in the midst of a political, security and socio-economic transition. The overall constraints relate to unstable government, inadequate policies and weak institutions that are unable to deal with the various challenges faced by the people. The volatile situation and the associated security risks are not very conducive for private sector investment either and impact efforts for reconstruction, economic growth and job creation. The situation also inhibits the financial sector from investing in the country. The security situation on the ground is unstable and becoming increasingly fraught, with the emergence of new and unruly militias. The parliamentary elections in October 2021, show a very low voter turn-out at only 36% indicating political disillusionment [EIU, 2021].Fundamental political and economic reforms are required to achieve any meaningful form of unity and stability and to overcome the sectarian and ethnic divisions in the country [AF, 2018].Meanwhile, fragility affects the government capacity to deal with development and economic issues, service delivery, poverty alleviation and climate risk threats.

Mitigation Measure(s)

The different development agencies working on the ground have learnt to navigate the security and instability and deal with it. The project will work around these factors by working in areas which are relatively stable and secure and by not taking any undue risks. The project's focus on two critical areas of need, mainly water and energy is expected to mobilize the people and give them a stake in their future so that the overall level of aspiration for peace and stability is enhanced (Annex, 6 Appendix 5). The mobilization of people on issues of common interest is expected to enhance collaboration and cooperation. The outcomes of the parliamentary elections of 2021 are not expected to produce a substantial shift in the makeup of parliament, with the dominant ethno-sectarian parties remaining in control.

Selected Risk Factor 3: Difficulties of Post-Conflict Reconstruction

Category	Probability	Impact
Governance	Medium	Medium

Description

War torn countries historically do not have a good governance record or strong capacity because of political and administrative weaknesses, corruption, ethnic tensions and conflict, economic depression, financial crises, etc., Iraq is a typical example of a fragile country that is reconstructing without an effective government or political stability. A post conflict country comes with a myriad set of issues including security, uncertainty, instability, and governance. First, there are considerable security risks. Not only do all agencies face the threat of recurrent terrorist attacks and/or a high crime rate, but they also face a risk that conflict itself will resume. This implies that an outside development agency has significant difficulty in maintaining a local office in post-conflict societies, and even if the agency establishes an office, donor officials are more likely to remain in the office rather than in the field due to security risks.

Mitigation Measure(s)

Experience of several external agencies have shown that it is possible nevertheless to work in post conflict countries by adopting a more interactive strategy of engaging with government, local communities and using the leverage and convening power of external agencies like the UN. The presence of a third-party entity to facilitate project management has proved to be a powerful factor in ensuring implementation progress on the ground. Continuity in local personnel helps to build local ownership, strengthen implementation and institutional memory. Inadequate local financial management and procurement capacity is best compensated for by ensuring external technical experts in financial management, procurement, and technical areas. FAO's technical capacity and administrative ability has been proven and well established in Iraq and will be used for the project through a strong PMU and recruitment of technical experts. To expedite decision making a high-level authority and oversight mechanism such as through a strong Project Steering Committee which can facilitate and expedite decision-making and ensure support has been put in place [Tanaka, et al, 2013]. However, at the same time, the PMU will be well-versed in GCF rules and regulations and given considerable autonomy of decision-making so that the progress on the ground is not stalled.

Selected Risk Factor 4: Implementation Delays and Cost Over-Runs

Category	Probability	Impact
Forex	Medium	Medium

Description

Approvals required at the level of both FAO and at the country level generally delay project implementation and can, in turn, lead to cost overruns due to rising prices. In the recent past countries have also experienced exchange rate instability due to factors that impact fuel and energy prices. These delays and increase in cost may adversely affect the economic returns from the project.

Mitigation Measures

FAO has a strong team in place in the country and has worked closely with the Government to ensure that all approvals are provided as soon as possible. In addition, FAO will put in place a strong team for ensuring that procurement is undertaken in a timely manner and well in advance. A procurement plan has been made as part of this proposal and FAO will ensure that it is implemented well in time. Cost over runs can partially be met through exchange rate gains in case of delays.

Selected Risk Factor 5: Financial Aspects		
Category	**Probability**	**Impact**
Credit	Low	Low
Description		
Iraq's sovereign risk rating was assessed to be CC by the Economist Intelligence Unit which is described as “somewhat weak capacity and commitment to honour obligations, a patchy payment record and likelihood to be in default on some obligations [EIU, 2021]. The currency risk has a CCC rating which entails a questionable capacity and commitment to honor obligations and a patchy payment record. The banking sector risk is also given a rating of CC. Declining foreign reserves played a prominent role in the downgrade. Efforts to improve commercial banks' ability to meet capital requirements will continue, but political inertia will hamper banking sector reforms. Access to finance for businesses and individuals will remain a core weakness.		
Mitigation Measure(s)		
The project is designed in such a manner so as not to put any additional financial burden on the Government of Iraq and to request grant financing from GCF. Iraq is facing major liquidity challenges that have resulted in delays in government employee and retiree salaries and an almost complete halt in government public investment. The private sector is not expected to make any direct contributions to public sector investments during the project implementation. The project is also not expecting any investments from the financial sector for credit funds to small holders during the project implementation. The Government is expected to provide in-kind contributions and only minimal in-cash financing of operation and maintenance of infrastructures in Component 1 (estimated at around USD 225.000 per year). It is expected that the Government’s revenue generation capacity may improve in the future. A recovery in oil prices in early 2021 has eased pressure on the oil-dependent fiscal and current accounts, reducing the risk that the sovereign will be unable to service its debts. However, a substantial decline in foreign reserves in 2020 and a devaluation of the exchange rate in December 2020 have offset the benefits to the rating. In December the Central Bank of Iraq devalued the dinar's peg to the US dollar to ID 1,450:USD1, from ID1,182:USD1 previously. Currency risk has subsequently declined as the gap between the official and the parallel exchange rates has narrowed. Iraq is seeking an IMF package estimated to be worth USD 6 bn, with funds to be disbursed over three years. A return to a trade surplus in 2021 is helping to ease currency pressures.		
Selected Risk Factor 6: Technical and operational		
Category	**Probability**	**Impact**
Technical and operational	Medium	Medium
Description		
Projects have been very slow to get off the ground especially when public sector ministries are in charge of executing projects and implementation on the ground. However, some agencies like the World Bank and JICA have made progress on the ground. Others like the International Fund for Agriculture Development (IFAD) have had very limited operations on the ground and recent projects have not yet started due to the inability of the Government to complete the disbursement requirements after more than two or three years of project approval.		
Mitigation Measure(s)		
The experience of some agencies like the World Bank and JICA provides good lessons on how to expedite performance on the ground. Having maintained its engagement and an uninterrupted field presence in Iraq since 2003, the World Bank Group has built a strong active portfolio in the country. This has resulted in important initiatives, notably in multi-sector emergency reconstruction programs in areas liberated from ISIS occupation, reforms of the public financial management (PFM) and social protection system among others, and private sector investments of more than USD1 billion. The Bank has also been able to engage the private sector to create jobs and more opportunities for young people. During the implementation of the current project, some lessons will be emulated such as the importance of national ownership, building the capacity of public institutions for sustainable development, working in partnership with international partners to drive governmental reforms. FAO has also built strong credibility in the country and enjoys the confidence of key Government Agencies. FAO has several on-going initiatives in the country and will build on its extensive experience and leverage some of its on-going projects. The most important aspect of design to ensure quick start-up and implementation on the ground is the management of the PMU by FAO. In addition, service agencies will be hired competitively to implement the water and energy infrastructure and service companies or local NGOs will be hired through an LOA for several aspects of implementation such as the CWW.		
Selected Risk Factor 7: Weak Institutional Capacity of Public Sector Institutions		
Category	**Probability**	**Impact**
Other	Medium	Medium

Description
The capacity of the MoA and MoWR and other government institutions to provide services to the agriculture sector has drastically deteriorated over the past 20 years. Budget cuts reduced the level of services resulting in the departure of skilled human resources in agriculture support services such as research, extension, animal health, artificial insemination, plant quarantine and disease control. The recovery of the capacity of these services is very slow, and there is a need for solid analysis to help identify the needed interventions in the short, medium and long term. In addition, most of agriculture research assets (buildings, labs and farms) have been damaged. Technicians are not sufficient in number or quality. The sanctions imposed on Iraq disrupted for a long time contacts with the outside world except to some extent with ICARDA and FAO. There is a lack of a real extension and training strategy with adequate operating budget, involving effective decentralization, privatization, gender empowerment, farmer participation, use of modern information technologies, linkages with research and other institutions such as universities, private sector, and support to women and youth. Finally, coordination among ministries is weak and irregular with possibly adverse impacts on project's activities (i.e. delays) .
Mitigation Measure(s)
The project does not depend on the implementation capacity of the Government directly and will contract in qualified service providers for the purpose. However, for long-term sustainability and up-scaling technical assistance will be provided to build the capacity of government agencies. Technical assistance will be provided to strengthen the regulatory and policy formulation capacity of the public sector agencies. In addition, the project will also train a large number of extension staff at the governorate level belonging to the Department of Agriculture and the Center of Extension and Training from Baghdad. This capacity building is expected to mitigate some of the weak institutional capacity of the extension agencies on the ground. In addition, the technical capacity of the DOWR and the DOA at the governorate level will be improved to better understand how to achieve irrigation efficiency[123], organize smallholders into farmer field schools and for field days. In addition, service providers or local NGOs will be used for outreach to women in the three selected Governorates. Finally, to ensure coordination and collaboration of the different ministries involved in the project will be guaranteed by the project Steering Committee (paragraph 66 page 33-34) and by the involvement of stakeholders in the preparation, review and monitoring of each annual workplan and budget of the project.
Selected Risk Factor 8: Farmer Organizations

Category	Probability	Impact
Technical and operational	Medium	Medium

Description
The authority of traditional Farmer Organizations (WUAs, Cooperatives, farmer associations, etc.) has been eroded by the unrest of the last two decades. In addition, various efforts at land reform have fragmented landholding and ownership patterns including the tenure reform associated with irrigation development and an erratic water allocation policy. Institutional support is needed to ensure that these groups regain their role and contribute to the development of the irrigation systems and agricultural production. Finally, a survey conducted in target areas, conflict over water resources (e.g. access, allocation, use) has been indicated as the main source of dispute among and within communities and 22% of respondents signaled problems related to it requiring collective action.
Mitigation Measure(s)
There are currently several emerging national programs being carried out by the Ministry of Agriculture that are piloting new practices and aiming at productivity enhancement and efficient use of natural resources and adaptation to climate change. These programs are relevant to the current project and present an opportunity to promote smallholder agriculture development. These include: (i) the national programme for the use of on-farm modern irrigation systems; (ii) the national programme for the improvement of wheat production; (iii) the national programme for the development of drought and salinity tolerant crops; (vi) the programme for the establishment of an agricultural meteorology network; (vii) the programme for the genetic improvement of local animal breeds; and (viii) the conservation agriculture project. In addition to introducing new agriculture practices, the national programs are in the process of promoting two relevant supportive instruments - namely the use of land suitability maps for the selection of crops according to respective agro-ecological zones; and the establishment of an effective network of an early warning system for monitoring and mitigation of climate change risks, which will support the country in identifying needed future interventions to support the agricultural sector and enhancing food security. Finally, the project will work with communities and their formal and inform organization to ensure that the project activities do not increase the current perception of disputes / conflict drivers but on the contrary, it supports their eradication (Annex 6, Appendix 5). To this end, the project will constantly liaise with communities and their representatives and will work extensively in empowering stakeholders and communities. Specifically, the project will contribute reducing the main drivers of conflict (e.g. access to water and poverty) by: (i) supporting stakeholders upgrading policies to ensure a right based approach to resources; (ii) expanding capacities of resources users' associations (e.g. WUA); and (iii) capacitating institutions and their decentralized extension officers to provide services and advice capillary across governorates and communities.
Selected Risk Factor 9: Private Sector Engagement

Category	Probability	Impact
Other	Medium	Medium
Description		
Unlike other countries in the region and given the absence of security and stability and an uncertain policy environment, the private sector has not made any significant investments in agribusiness or in other major sectors in the country. Problems include security, unclear requirements for registering businesses, license requirements, limited communication infrastructure and logistics, difficult access to finance and a non-competitive business environment lacking transparent and clear legal frameworks for rules-based-market competition.		
Mitigation Measure(s)		
The new vision developed for the agricultural sector aims to build a diversified and prosperous economy with industry, energy, agriculture and tourism as the main drivers and pillars of development, where the public and the private sector along with civil society are partners in development, and where centralized and decentralized roles complement each other in managing development. New private sector initiatives are emerging, and the SRVALI project will encourage their inclusion so that they become strong partners especially for input supply and introduction of water and energy conserving technologies and inputs.		

Selected Risk Factor 10: **Money laundering and countering the financing of terrorism (ML/TF)**

Category	Probability	Impact
Governance	Low	Low
Description		
Risks of money laundering and countering the financing of terrorism.		
Mitigation Measure(s)		
FAO includes in the project agreement signed between FAO and the Government of Iraq clauses related to AML/CFT, as follows: a) The Government shall comply, and shall require all persons and entities engaged in its activities under the Project to comply, with all internal anti-money laundering, counter-terrorism financing laws, rules, and regulations; b) The Government confirms it has obtained sufficient undertakings from all persons and entities involved in its activities under the Project that they shall not engage in any prohibited practices; the Government undertakes and confirm that it shall comply with the substantive objectives of the GCF's Policy on Prohibited Practices; c) Consistent with numerous United Nations Security Council resolutions adopted under Chapter VII of the UN Charter, the Government and FAO are firmly committed to the international fight against terrorism and, in particular, against the financing of terrorism. It is the policy of the Government and FAO to seek to ensure that none of their funds are used, directly or indirectly, to provide support to individuals or entities: i) associated with terrorism, as included in the list maintained by the Security Council Committee established pursuant to its Resolutions 1267 (1999) and 1989 (2011); or ii) that are the subject of sanctions or other enforcement measures promulgated by the United Nations Security Council. This provision must be included in all agreements that may be concluded with third parties for the implementation of activities under the Project. During project implementation FAO, as AE, will ensure close monitoring and supervision through its offices in the regional office and HQ in order to ensure that the activities are implemented in full compliance with the signed project agreement. FAO will establish appropriate fiduciary management and control measures to ensure that materials or technology procured under this project are used only for the purposes intended and are not diverted or misused for unauthorized, improper or illicit purposes based on its institutional and project-level grievance redress mechanisms, corporate policies on fraud and other corrupt practices, FAO Vendor Sanctions Policy (Admin circular 2014/27), FAO Whistleblower Protection Policy (Admin Circular 2011/05) and others listed here: http://intranet.fao.org/departments/oig/investigations/ including those of the Office of the Inspector General (OIG) will be in place to address this risk		

G. GCF POLICIES AND STANDARDS

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

140. In accordance with FAO and GCF's Environmental and Social Policy (ESSP), the SRVALI project design underwent an environmental and social assessment following FAO's environmental and social safeguards guidelines (FAO, 2015). An Environmental and Social Management Framework was prepared (ESMF) and is presented in Annex 6. The ESMF identifies policy triggers for the project, screening criteria for activities, environmental and social impacts of the activities, and measures to mitigate identified risks. Mitigation actions will avoid, minimize and mitigate negative impacts during project implementation and operation. These actions will be in line with FAO and GCF ESS policy, and national legislation, and adhere to whichever is most stringent. The ESMF also sets out the modalities for stakeholder engagement, and the procedure and process for dealing with complaints, through the Grievance Redress Mechanism. The ESFM will be disclosed on relevant portals, and shared with stakeholders during stakeholder engagement consultations, so they are aware of potential consequences of project activities. During these stakeholder consultations, the Grievance Redress Mechanism will also be presented and explained. Consultations with stakeholders during project implementation will take place yearly, at the time of the preparation of the Annual Work Plan and Budgets (AWPB). The AWPB will be presented by the PMU to the Project Steering Committee for approval. In order to ensure a smooth and effective ESMF process, an ESS specialist will be engaged by the project to be responsible for the environmental and social safeguards process (including GRM), interacting on a regular basis with key stakeholders and being available to respond to any grievances.

141. The consultations[124] held in the frame of workshops and multilateral and bilateral meetings at the national, governorate and local level, verified the technical feasibility of project components and allowed to obtain feedback from stakeholders on all aspects of the initiative. Furthermore, this process allowed ensure that the design met national priorities (irrigation efficiency, CSA energy, and climate change, with a strong gender focus) and local needs, and to identify activity priority areas and gaps, project target areas, and main stakeholders. The components include implementing climate-resilient agronomic systems and technologies, the prevention and restoration of climate-induced soil and water degradation, awareness-raising among all rural communities, more efficient use of irrigation water, and the development of renewable energy infrastructure. A key risk faced by the project is the increase in use of water by the upper riparian countries. However, this risk is beyond the control of the project but is an issue that the Government is dealing with at the highest level. Empowering women is mainstreamed in project interventions with specific activities also identified to promote women's agency. There will be no significant or irreversible negative environmental impacts associated with the project. Rather, the project will have environmental and social benefits including improved water conveyance efficiency leading to reduced water loss from evaporation and seepage; build the adaptive capacity of communities and institutions in Iraq; address the needs of vulnerable groups with a strong emphasis on women, and increase the resilience of water management systems as well as agricultural resources to climate change. Proposed project investments are designed to have positive social and environmental benefits; the project has however been classified as ***moderate risk (Category B)*** largely due to works associated with water resources. ESS triggered are:

- ESS 1 (natural resources management). Risks are related to infrastructure works on irrigation canals and installation of solar panels. Best practices for construction works will be implemented, and all left-over construction material will be disposed of at the appropriate site and in an appropriate manner. The execution of works by contractors will comply with established environmental, health, and safety (EHS) contractual requirements; ESMPs will be prepared for each sub-activity.
- ESS 3 (plant genetic resources for food and agriculture). Salt and drought-tolerant crop varieties that will be demonstrated during FFS are varieties already commonly used in the country, developed and tested by the National Agricultural Research Center. These varieties are not OGM and are already registered and authorized by the national seed authority. No seeds will be procured and no new planting material (crop varieties) will be introduced into the country.
- ESS 7 (decent work) and ESS 8 (gender equality) Potential risks could be related to equitable benefits from project activities. To address this, project activities specifically target women (ref. Gender Action Plan; Climate Wise Women activities). Occupational health and safety risks will be dealt with by providing training and protective measures and gear as well as provisions for protecting workers against COVID-19. Where the project hires workers, employees' rights as per UN/FAO standards will be respected. The employment of project workers will be based on the principle of equal opportunity and fair treatment, and there will be no discrimination with respect to any aspects of the employment relationship.

142. The project is designed to ensure benefits to all target groups and peoples that will be impacted by project activities. During the project design, the presence of Indigenous People was not identified in the target governorates. The AE agrees that during the inception phase, the project will develop an Indigenous Peoples Plan, as per GCF IPs Policy, in case any presence of Indigenous People in the project areas is reported., Indigenous. Peoples leaders will be included in discussions related to project activities. Annex 6 provides the Environmental and Social Management Framework (ESMF) and Annex 7 provides a summary of consultations and the Stakeholder Engagement Plan (SEP).

143. The project will identify and mitigate SEAH risks or potential adverse impacts on women, men, girls and boys as early as possible as a part of environmental and social risk screening and reflect such risks or impacts in relevant safeguards

instruments (including ESMF and ESMPs, Gender Action Plans and others as appropriate), and propose mitigation measures, differentiated by gender and age where relevant as follows:

- Include measures (including pre-project implementation awareness raising for host communities and project workforces) to enhance gender equality, and to prevent, address and eliminate SEAH in the relevant projects or programs and safeguards instruments;
- Implement, monitor and continuously improve all measures to mitigate and manage the identified SEAH risks and impacts;
- Ensure that sufficient and adequate financial and human resources are allocated to ensure SEAH-related compliance.
- Ensure that stakeholder consultations prior and during project implementation include awareness raising and stakeholder-differentiated understanding of SEAH related risks and mitigation measures.

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

144. The project design is based on the understanding that gender dynamics affect resilience and the capacity to adapt to climate change and that women, who have less socio-economic power than men, are disproportionately impacted by climate change (Annex 8). The project aims to empower rural women in the three target Governorates through giving them visibility as farmers and water users, including their 'voice' in all the consultations, increasing their knowledge and skills in climate resilient practices, providing opportunities for decision-making and leadership. The Gender Action Plan of the project ensures that nearly 50 percent of all direct and indirect beneficiaries are women and aims to have a transformative impact on women's role in climate change through their increased visibility and active engagement in water management and leadership roles in climate resilient agricultural interventions.

145. Iraq ratified the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) in 1986 but has yet to ratify the Optional Protocol on violence against women. There are some government policies and strategies aimed at promoting and protecting women's employment and economic empowerment such as the National Action Plan for the Implementation of United Nations Security Council Resolution (UNSCR) 1325 (NAP 1325), the 2014-2018 National Strategy for the Advancement of the Status of Iraqi Women, and the Iraq Labor Law of 2015. These laws provide paid maternity leave, prohibit discrimination against women during recruitment and in the workplace, and increase female participation in the public sphere. The National Strategy on Violence against Women and Girls 2018-2030, provides an overall framework on which policy and decision makers will draw to take concrete actions aimed at preventing violence against women and girls and protecting survivors of violence. There are no specific policies on the empowerment of rural women, and neither is there a gender strategy in place for the agricultural sector. However, findings from the present assessment indicate that the implementation and enforcement of these policies is inconsistent, particularly in the private sector.

146. According to the Humanitarian Needs Overview Iraq 2020 (HNO), 1.29 million people are at risk of gender-based violence (GBV) in Iraq. Of these in need, 84 percent are women, 39 percent are children, five percent are older persons and five percent are people with disabilities. Furthermore, it is also noted that 98 percent of the GBV survivors who reported GBV are women or girls and the main incidents reported are of domestic violence followed by forced/child marriages.53 However, reporting is quite limited and most GBV survivors refuse referral to specialized services due to fear of stigma and mistrust in available services and avenues for legal redress, as well as the potential for further violence.[54]

147. Domestic violence continued to remain endemic in 2020, including the killings of women and girls by their families and husbands. While Iraq's Criminal Code criminalizes physical assault, article 41(1) gives a husband a legal right to "punish" his wife and parents to discipline their children "within limits prescribed by law or custom." The Penal Code also provides for mitigated sentences for violent acts, including murder, for "honorable motives" or for catching one's wife or female relative in the act of adultery or sex outside of marriage. Iraqi parliamentary efforts to pass a draft law against violence stalled throughout 2019 and 2020. The 2019 version of the draft anti-domestic violence law seen by Human Rights Watch includes provisions for services for domestic violence survivors, protection (restraining) orders, penalties for their breach, and the establishment of a cross-ministerial committee to combat domestic violence. However, the bill has several gaps and provisions that would undermine its effectiveness, including that it prioritizes reconciliation over protection and justice for victims.[55]

148. According to the GBV Sub-Cluster Rapid Assessment on the Impact of COVID-19 Outbreak on GBV in Iraq, COVID-19 has increased the risk of GBV in Iraq through various ways.[57] Firstly, due to the restrictions on movement and confinement measures, the GBV survivors might face challenges in accessing the lifesaving GBV services including safe shelters. This is also even more striking, as there is no possibility of sheltering all the women that face abuse due to lack of a law that protects the survivors. Furthermore, it has been noted that resources might be directed to health interventions and this can lead to gaps in GBV service provision. Secondly, loss of livelihoods due to economic consequences of COVID-19 pandemic can have dire impact on women as it might increase the risk of exploitation and sexual violence. Loss of breadwinner position in household from men's side can potentially trigger intrahousehold conflict. Lastly, the crisis can increase the burden of women and girls, who are mostly the caregivers to the children, the sick and the elderly, and hence lead to an increased risk of infection. This is also valid for girls, whose schools are closed and who might be undertaking additional caregiving roles.[58]

149. The remote protection monitoring led by 12 organizations in 110 assessed sub-districts by conducting 1,442 key information interviews on June 2020 has also showed that main protection risks affecting women and girls are psychological trauma (68 percent), stress and anxiety; lack of specialized services for women (45 percent); lack of safe space and privacy (36 percent) and violence or abuse within families/households (23 percent). More than 50 percent of the interviewees also

reported a significant increase in the severity of these issues. Furthermore, there has been increased reports of GBV, such as domestic violence, self-immolation, self-inflicted injuries due to spousal abuse, sexual harassment of minors and suicide, and transactional sex.[59]

150. In Component 1, the GAP focusses on increasing women's visibility in the irrigation and water management sector by (i) addressing women' strategic interests through undertaking a study documenting women's roles in off-farm and on-farm water management and identifying strategies for their increased participation and role in decision-making in the water sector (ii) their direct representation in decision-making bodies such as the WUAs (iii) building capacities of women farmers in water management through training (iv) building the technical expertise of women government officers of MoWR, DoWRs, MoA and DoA in water management (v) ensuring women's practical needs are addressed and safeguarded in design of closed canal systems and installation of solar panels on canals through mandating consultations with women and gender-sensitive technical designs.

151. In Component 2, the GAP ensures (i) rural women's role as agents of change for climate resilience is made visible and they are equipped with the required knowledge, skills and resources (ii) women have increased and equitable access to knowledge and skills for climate adaptation through interventions tailored to their specific priorities and needs (iii) women at the grassroots play an active role in researching the impact of climate change on their lives (iv) women have increased access to information through gender-sensitive ICT4CC (v) women have the profile and visibility to be informed interlocutors in the national dialogue on climate change (vi) women have the opportunity to network with each other, government and key stakeholders across governorates and (vii) the gender differentiated impact of the interventions in this component are captured. It also ensures that (viii) women have access to information on solar energy and that (ix) the capacities of women staff from the Government line agencies are built in the area of climate adaptive agriculture, solar energy and solar powered irrigation systems.

152. In Component 3, the GAP ensures that women's strategic interests are addressed in the development of the national Climate Resilient Water Allocation Strategy and women water users' perspectives are incorporated in improved national compliance practices for management of irrigation water supply. The solar rural electrification plans developed under this component will also identify and address gender issues. PMU project staff and key stakeholders from relevant ministries will be sensitized to gender issues through gender training and briefings on the Gender Action Plan. In addition, women's safe participation will be ensured through sexual harassment prevention training for implementers and through GBV training to CWW. A communication campaign highlighting women's role in climate change adaptation and irrigation will be conducted and any communication campaign conducted by the project will be gender inclusive in its selection of content and delivery channels.

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

153. As Accredited Entity for the project, FAO will ensure that financial management and procurement of goods and services using GCF resources adheres to relevant FAO rules and regulations, as well as relevant provisions in the Accreditation Master Agreement (AMA) signed between FAO and GCF. These rules and regulations were reviewed and deemed satisfactory by the GCF Secretariat and Accreditation Panel as part of FAO's accreditation process. This includes financial management and procurement performed by FAO-Iraq Office as Executing Entity.

154. FAO has deployed an Oracle-based Enterprise Resource Planning (ERP) system, the 'Global Resources Management System' (GRMS), which provides all FAO employees in all locations globally with travel, human resources, procurement, and finance functionalities. Using GRMS improves the flow of financial information, supports financial monitoring and reporting, increases transparency and visibility, and strengthens internal control. FAO maintains a Chart of Accounts which is used by the whole Organization and that allows for a separation of income and expenditure by donor and project, and it provides a standardized coding structure that enables data to be recorded, classified, and summarized to facilitate internal management and external reporting requirements.

155. Direct procurement by FAO is done in accordance with its Manual Section 502 on "Procurement of Goods, Works, and Services". To sub-contract the delivery of specific activities using Letters of Agreement, FAO operates in accordance with its Manual Section 507 on "Letters of Agreement". Such services are managed by the FAO Procurement Service, which provides policy and operational support to ensure that the Organization procures goods, works, and services based on "Best Value for Money" principles.

Financial management and procurement executed by FAO-Iraq Office as Executing Entity will be overseen and supervised by the FAO-GCF project supervision team. The FAO-GCF project supervision team will undertake regular supervision missions and recruit a qualified, internationally recognized auditing firm to perform frequent spot checks and audits to ensure financial management and procurement by the PMU and executing entities are conducted in line with agreed standards and practices. This will be governed by the agreements to be signed between FAO and other executing entities before the project becomes operational.

G.4. Disclosure of funding proposal

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

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

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

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

H. ANNEXES

H.1. Mandatory annexes

☒	Annex 1	NDA no-objection letter(s) **(template provided)**
☒	Annex 2	Feasibility study[125] - and a market study, if applicable
☒	Annex 3	Economic and/or financial analyses in spreadsheet format
☒	Annex 4	Detailed budget plan **(template provided)**
☒	Annex 5	Implementation timetable including key project/programme milestones **(template provided)**
☒	Annex 6	E&S document corresponding to the E&S category (A, B or C; or I1, I2 or I3): **(ESS disclosure form provided)** ☐ Environmental and Social Impact Assessment (ESIA) or ☐ Environmental and Social Management Plan (ESMP) or ☐ Environmental and Social Management System (ESMS) ☐ Others (please specify – e.g. Resettlement Action Plan, Resettlement Policy Framework, Indigenous People's Plan, Land Acquisition Plan, etc.)
☒	Annex 7	Summary of consultations and stakeholder engagement plan
☒	Annex 8	Gender assessment and project/programme-level action plan **(template provided)**
☒	Annex 9	Legal due diligence (regulation, taxation and insurance)
☒	Annex 10	Procurement plan **(template provided)**
☒	Annex 11	Monitoring and evaluation plan **(template provided)**
☒	Annex 12	AE fee request **(template provided)**
☒	Annex 13	Co-financing commitment letter, if applicable **(template provided)**
☒	Annex 14	Term sheet including a detailed disbursement schedule and, if applicable, repayment schedule

H.2. Other annexes as applicable

☐	Annex 15	Evidence of internal approval **(template provided)**
☒	Annex 16	Map(s) indicating the location of proposed interventions and climate change analysis
☐	Annex 17	Multi-country project/programme information **(template provided)**
☐	Annex 18	Appraisal, due diligence or evaluation report for proposals based on up-scaling or replicating a pilot project
☐	Annex 19	Procedures for controlling procurement by third parties or executing entities undertaking projects financed by the entity
☒	Annex 20	First level AML/CFT (KYC) assessment
☐	Annex 21	Operations manual (Operations and maintenance)
☒	Annex 22	Assessment of GHG emission reductions and their monitoring and reporting (for mitigation and cross cutting-projects)
☒	Annex 23	Estimation of Benefits and Beneficiaries
☒	Annex 24	Theory of Change
☒	Annex 25	Costs & Financing and Economic & Financial Analysis Working Paper

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

Endnotes

1 Institutional role and legal basis of WUA has been described among other in par. 94 on page 58. of Annex 2. The fourth amendment to law 12 of 1995 (in its article 15, item III, paragraph C) stipulates that the beneficiaries of a common water source must establish an association for its management, operation and maintenance.
2 ND-Gain Country Index available here: https://gain.nd.edu/our-work/country-index/rankings/
3 In the ND-Gain description, “The high vulnerability score and low readiness score of Iraq places it in the upper-left quadrant of the ND-GAIN Matrix. It has both a great need for investment and innovations to improve readiness and a great urgency for action. Iraq is placed on 101st of the vulnerability ranking and on the 151st position of the readiness ranking. Since 2006, its vulnerability has been slightly decreasing thanks to a decreasing vulnerability in food production reaching 0.456, and a slight improvement in terms of fresh water with a water score of 0.358. In terms of readiness, governance and social readiness has been very low due to critical scores of control of corruption, education and innovation (0.107, 0112, 0.078 respectively).
4 In the Mediterranean climate zone, precipitation ranges are higher: around 400-1000 mm annually
5 The analysis of climate data in Iraq used local data from meteorological stations. Due to lack of data or their accessibility, the analysis of the regional watershed used remote sensing data.
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8 Bagdad, Al-Rutba, Al-Hay, Diwaniya, Nasriiya, and Basra are located in the desert zones, Mosul and Kirkuk are in the tropical/semi-dry climate zones.
9 No exact value on temperature increases and precipitation decreases was shared in the INC, only regression coefficients.
10 Regression coefficients showed a positive trend between +0.01°C and +0.05°C (per year) in annual temperatures. Between 1938 and 2009, total annual rainfalls decreased in most stations, with a regression coefficient between -0.31 mm and -1.35 mm per year (except in Nasiriya that recorded positive trends with +0.16 mm between 1941 and 2009, and in Al-Rutba with +0.19 mm between 1941 and 2002) [UNFCCC, 2017].
11 Presently, 39% of the country’s surface is estimated to have been affected by desertification, with an additional 54% under serious threat [Sissakian, 2013]
12 Expressed in standard deviation of the last 6 years (moving window) of annually accumulated precipitation
13 RCP 4.5 Scenarios are less clear and show a slight decrease in variation in Karbala (-0.76 mm/dec.) and Muthanna (-1 mm/dec.)
14 For each variable, two median models (one for each scenario) were derived from the 20 models of the NEX ensemble. These two median models were validated and used to assess the climatic trends of Iraq. The validation was performed against the observed local data, over the longest overlapping period between the observed and the projected data (2006 to 2019, 13 years). To assess the quality of the validation, the Normalized Root Mean Square Error (NRMSE) was calculated by dividing the Root Mean Square Error by the range of the values of the observed data
15 Temperature and precipitation projections are based on a global synthesis output from around 40 Global Climate Models (GCM) and Coupled Model Intercomparison Project Phase 5 (CMIP5) simulations. See https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_Chapter14_FINAL.pdf
16 Related to minimum temperature, only Karbala showed with -0.64°C per decade a change, while it was not identify trends in the other governorates and on the national level.
17 The indicator Crop Water Availability provides an estimation of the surplus or deficit of precipitation to meet the evaporative demand of a reference crop and thus, it is a key factor that defines crop irrigation needs
18 Table 7 and 8 of Annex 2 present an overview on climatic and non-climatic factors contributing to reduced flow of rivers.
19 Zeinab H. & al, 2021. Strategic Study for Water and Land Resources in Iraq (SWLRI): Water-Food-Energy-Environment. Paper presented at first Baghdad International Water Conference
20 Ahmed A., 2019. PhD. Thesis, Arizona State University: Optimization Models for Iraq’s Water Allocation System
21 Ali A. & al, 2016. Article published in International journal of water resources development. Groundwater use and policy options for sustainable management in Southern Iraq. (http://dx.doi.org/10.1080/07900627.2016.1213705)
22 if Turkey, Syria, and Iran fully implement currently foresee development projects
23 CROPWAT 8.0 for Windows is a computer program for the calculation of crop water requirements and irrigation requirements based on soil, climate, and crop data, developed by the Land and Water Development Division of FAO.
24 Major droughts (occupying > 50% of the country) occurred in Iraq during the years 1901, 1905, 1932, 1964, 1973, 1990, and 2008–2010. The years in which above-normal precipitation conditions prevailed in > 50% of Iraq were 1907, 1911, 1914, 1916, 1918–1919, 1926, 1938, 1946, 1954, 1957, 1974, and 1982.
25 Mapping climate change in Iraq and Jordan. Mapping climate change in Iraq and Jordan Eddy De Pauw, Muna Saba, and Sabah H. Ali. 2015.
26 Hamza Neamah Nasir et al. Drought Hazard Assessment In Iraq Using SPI and GIS Systems Hamza Neamah Nasir Civil Engineering Department, College of Engineering, Basrah University, Iraq Dr. Ahmed Naseh Ahmed Hamdan Civil Engineering Department, College of Engineering, Basrah University, Iraq.

27 The average yearly inflow of the Euphrates reportedly declined from 30.26 BCM (1933-1972) to about 16.90 BCM (average of 1990-2012) (decrease of 44%), while the inflow of the Tigris declined from 49.22 BCM (1933-1998) to 32.64 BCM (1999-2012) due to over use by the upper riparian countries [Ahmed A., 2019].
28 Mainly in Najaf where 257,525 tons of rice were produced in 2019 (FAO data)
29 Productions vary according to the year. The latest data for 2019 and 2020 showed that wheat production do not exceed 200,000 tons in the three governorates; 51,040 tons of barley were produced in Muthanna and less than 3,000 tons in the two other governorates; corn production did not exceed 150 tons in Najaf and Muthanna in 2019, and 3,251 tons were in Karlaba; potato with 776 tons produced in Karbala, 355 tons produced in Muthanna, 22 tons in Najaf, in 2019 (FAO data).
30 Food imports doubled between 2013 and 2017 reaching 15%; in parallel, the average value of food production decreased from 83$ per capita (2012-2014) to 54$ per capita (2014-2016). See http://www.fao.org/faostat/en/#country/103 and http://www.fao.org/faostat/en/#country/103
31 Some data may have limited statistical relevance, further details on historical and projected trends are reported in Annex 2.
32 The criteria refer to (1) percentage of households vulnerable to food insecurity (2) proportion of people who are multidimensionally poor (index includes income poverty as well as standards of living, essential services, health, and education indicators) (3) Youth Development Index (covering education, health, and employment and other dimensions). See https://www.ophi.org.uk/wp-content/uploads/IraqNHDR2014-English.pdf
33 The GHG reduction of the infrastructural activities in component 1 are accounted for in core indicator 1, while the GHG reductions deriving from improved agricultural practices are accounted as co-benefits.
34 As per INDC, 2015, adaptation actions in irrigation only have estimated at USD 45.5 billion (automated irrigation modalities)
35 Additional details are available in Annex 2, footnote 42 page 54.
36 Project has not been approved yet by the GCF. SRV-ALI used the outcomes of the current design as lessons learned.
37 The problem of soil salinity is mainly linked to poor irrigation approaches of farmers. The Ministry of Agriculture, Farmers and FAO experts identified as main mitigation approaches the dissemination of sustainable irrigation and soil management practices via FFS and other knowledge sharing approaches (i.e. ICT4CC).
38 Annex 2 presents in table 81, 82 and 83 the option analysis evaluating the potential impact of each option and its interventions under each component of this project.
39 Compendium on Climate -Smart Irrigation: Concepts, evidence and options for a climate-smart approach to improving the performance of irrigated cropping systems.
40 The role of the WUA related to irrigation are described in detail in Annex 2 from par. 94 to par. 97.
41 Combines contribution of agriculture, fishery and forestry
42 https://www.adaptation-fund.org/wp-content/uploads/2018/03/AFB.PPRC_.22.16-Proposal-for-Iraq.pdf
43 Due to Iraq's pressing water crisis, the United Nations Iraq Water Task Force, co-chaired by FAO, was established early 2023. The Task Force objective is to initiate an inclusive National Dialogue on Water, leading to a water roadmap while supporting the Government to implement its national water strategies to improve the country's water security situation including the commitment on the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UN Water Convention) signed on 24 March 2023. Therefore, the FAO will constantly liaise between the project steering committee and the Iraq Water Task Force.
44 Annex 2, par. 134
45 Actual irrigation conveyance efficiency is estimated to be equal to 0.686 (ref. Appendix 19 of Annex 2) which means that around 31.4% of the water is lost before reaching the farmers. Considering the actual water needs we considered for 2020 water year: the equivalent conveyance losses were estimated at 7.6 Mm3, 11.02 Mm3 and 5.008 Mm3 respectively for each of the targeted project areas in Najaf, Muthanna and Karbala.
46 The Performance of the Irrigation sector related to water use is described in detail in Annex 2 from par. 150 to 153.
47 Hanna. G. et al (2014), 'Foreign Direct Investment in Post-Conflict Countries: The Case of Iraq's Oil and Electricity Sectors', International Journal of Energy Economics and Policy Vol. 4, No. 2, pp. 137-148
48 https://www.atlanticcouncil.org/blogs/menasource/how-the-agri-food-sector-can-turn-iraqs-economy-around/
49 According to the FAO definition, Climate Smart Agriculture is an approach that involves different elements embedded in local contexts. Climate Smart Agriculture relates to actions both on-farm and beyond the farm, and incorporates technologies, policies, institutions and investment.
50 Initiate a public-private sector dialogue, whereby businesses are consulted by the Government before new policies and laws are drafted.
51 Develop and propose new policies and strategic plans targeting the priority sectors that support private business engagement.
52 Fortify the private sector institutions and associations and the coverage of services to their membership.
53 Expressed in standard deviation of the last 6 years (moving window) of annually accumulated precipitation
54 RCP 4.5 Scenarios are less clear and show a slight decrease in variation in Karbala (-0.76 mm/dec.) and Muthanna (-1 mm/dec.)
55 The canals targeted are secondary and tertiary canals totalizing a total of 68 Km.
56 Construction phase foresees the involvement of the local population in order to accommodate other needs like watering points for livestock.

57 Given the main climate change impacts identified in the country (e.g. increasing temperatures, decreasing rainfall, and increasing rainfall variability) and project areas and the type of infrastructures proposed, exposure to climate change hazards of planned infrastructures is considered minimal. Irrigation pipes will not be under direct sunlight but buried underground and therefore not subject to temperature extremes. Concerning the solar systems, given that panels are installed over water canals, enough ventilation is foreseen to counterbalance temperature increases foreseen by climate change..
58 The upgrade of distributary and watercourses earth canals will only concern three sites while for the rest of the sites the upgrade will be only for distributary canals. The reason being the budgetary limitations to cover all the watercourses in the other sites.
59 In each governorate one case will be installed. Proposed canals are: (i) free of resettlement, relocation, and land acquisition issues; (ii) not budgeted from other resources; (iii) consistent with MoWR's strategic priorities and plans; (iv) prepared in consultation with other line ministries where feasibility studies for new proposals are involved to avoid duplication and conflict. List of eligible canals are indicated in table 5 and require to have a Water User Association already formed.
60 The contractors are required to include in the bidding documents an analysis of potential climate change impacts on infrastructure and include in the proposal related mitigation elements.
61 Taking into consideration a reduced pace of execution during the rainy season which last between November and April and the accommodation of irrigation season need.
62 Procurement rules will foresee that contractors will have to recruit first from local communities where works will be funded.
63 In the target area 1,000kWp of PV are estimated to produce approx. 1,460 MWh per year, considering an average irradiation of 1,770 kWh/m/a and a Performance ratio of the systems of 82%.
64 The contractors are required to include in the bidding documents an analysis of potential climate change impacts on solar systems and include in the proposal related mitigation elements.
65 PV components are subject to significant price changes. Cost estimations will therefore be updated during the detailed design phase of the project in Year 1.
66 The activities will further also introduce project development/management/remote real time management in the curricula
67 The project is aiming at 25% women trained. Beneficiaries' institutions are the MoWR, MoA, MoE and IME. The PMU will identify the candidates in coordination with these Ministries in the first stages of the project
68 (i) Developing and adopting water-distribution plans based on crops requirements and climate change projections; (ii) minimizing degradation of water quality in the surface and ground water through improved agriculture and irrigation practices; and (iii) managing, operating and maintaining irrigation schemes.
69 Farmers will be selected in collaboration with the MoA on the basis of the criteria indicated in table
70 Activities related to FFS and ICT4CC (sub-component 2.1) will also support awareness raising related to food system diversification, circular economy, farm to fork principles and reducing food loss and waste.
71 During the design phase the project had interviews with several private sector operators. Nonetheless, their interest will be confirmed by the PMU in the first stages of the project in coordination with sectoral chambers of commerce, industrial associations and the different line Ministries (MoWR, MoA, IME and MoE)
72 Experiences from SIDA that has developed regional FFS will be accessed to learn from experiences and fine tune activities.
73 Demonstration farms will be identified in the first phases in coordination with the MoA
74 FFS will involve maximum of 25 farmers at the time, of which at least 9 (30%) will be women.
75 These three points will be assessed via questionnaire by the NGO responsible for the implementation of the activity.
76 For example, the Extension Service (MoA) manages a Facebook space which is popular among farmers: https://www.facebook.com/iraqirshad
77 https://www.wocan.org/who-we-are/
78 Status farming and capacity to work in the field will be assessed via questionnaire by the NGO responsible for the implementation of the activity.
79 Initiate a public-private sector dialogue, whereby businesses are consulted by the Government before new policies and laws are drafted.
80 Develop and propose new policies and strategic plans targeting the priority sectors that support private business engagement.
81 JICA, 2016. Data collection survey on water resource management and agriculture irrigation in the Republic of Iraq
82 These could include the AL-Mishkhab Rice Research Station (Najaf), the Desert Research Station, (Najaf for barely, wheat and livestock), the Corn Research Station (Al-Nouriyya), the Agricultural Extension Center- Muthanna governorate (Al Najmy region), Research station of college of agriculture- Muthanna University, Agricultural Extension Center- (Karbala), Almuradiyah Research Station (Babil-Wheat).
83 Iraq's Economic Update — April 2021 (worldbank.org)
84 https://www.mei.edu/publications/what-does-russias-war-ukraine-mean-iraq
85 This type of debt gives the lender a limited amount of recourse to the borrower's other assets if they default on the debt.
86 Obligations rated Caa are judged to be speculative of poor standing and are subject to very high credit risk. he modifier 1 indicates that the obligation ranks in the higher end of its generic rating category.
https://www.moodys.com/Pages/amr002002.aspx

87 Trading Economics, 2023.
88 The Strategy for Water & Land Resources in Iraq (SWRLI) until 2035 expects the application of updated efficient irrigation schemes to reduce the amount of surface water in 2035 by about 13.75 BCM, or about 31% compared to the present time (from 49 to 34 BCM), despite the increase in the irrigated area by 17%.
89 Conduct surveys of the formal and informal private sector.
90 Develop modern information systems for the Government and private sector stakeholders.
91 Build capacity in the Government and the private sector on the best use of information when planning, executing, tracking and reporting on progress.
92 Initiate a public-private sector dialogue, whereby businesses are consulted by the Government before new policies and laws are drafted.
93 Develop and propose new policies and strategic plans targeting the priority sectors that support private business engagement.
94 Fortify the private sector institutions and associations and the coverage of services to their membership.
95 Among others the news has been published on the specialized online magazines Bloomberg and PV Tech
96 The total cost of the upgrade of irrigation canals is estimated at USD 22.7 million. The cost estimates are based on the preliminary design for the Left Alkamalia DC7a and DC7a-1 distributary canals and their watercourses (see Annex 2 appendix 17). This preliminary design was used to establish an average investment cost per ha for canals upgrade that was then used to estimate the budget for the upgrade of the pre-selected canals as shown is table 56 on page 173 of Annex 2.
97 The total cost for the installation and operation and maintenance during project implementation of solar systems on water canals is estimated at USD 2.1 million (table 60 on page 179 of Annex 2). The cost estimates are based on the preliminary feasibility estimations for canals in Najaf and Muthanna (see Annex 2 Appendix 20). These estimation was used to establish average conservative investment cost per 1,000kWp of the installation of solar systems on the pre-selected canals as shown is table 58 above.
98 The total population in the three target governorates was estimated to be 3.596 million in 2019 or about 9% of the total country population.
99 United States, India, Japan, Cape Verde, Spain, etc
100 The project includes only the mitigation outcomes related to component 1 in Core indicator 1, while it accounts the impact of the capacity development activities for Climate Resilient Agriculture in component 2 are accounted as co-benefits.
101 The following study by the IEA estimates the average global price of CO2 per tonne mitigated by PV systems to be 30 USD per tonne, based on a lifetime of the plant of 25 years. In the CN we followed a conservative approach based on a lifetime of 20 years and a substitution of grid electricity, which, according to the World Bank, is in Iraq responsible for 0.683 kg CO2/kWh. In case of a substitution of diesel pumps, 46% more CO2 (1 kg CO2/per kWh, FAO 2016) would be avoided. The costs for CO2 avoided would hence be even lower. All these details can however only be defined and clarified at design stage.
102 Fulford and Sturm, 1984
103 In the Mediterranean climate of south-east Spain. Martínez Alvarez et al., 2006.
104 The developers of the Narmada project in India have estimated that the lower temperature will increase solar panels' efficiency by as high as 7%, compared to ground mounted installations
105 The Global Action against Trafficking in Persons and the Smuggling of Migrants - Asia and the Middle East (GLO.ACT Asia and the Middle East) a four-year (2018-2022), €12 million joint initiative by the European Union (EU) and UNODC being implemented in partnership with the International Organization for Migration (IOM).
106 Includes the values of agriculture, fishery and forestry
107 World Bank. Country Economic Background for Iraq
108 Value depend on a variety of local factors, such as canal width and evaporation. Data is taken from the following analysis carried out for California: McKuin, B., Zumkehr, A., Ta, J. et al. Energy and water co-benefits from covering canals with solar panels. Nat Sustain (2021). https://doi.org/10.1038/s41893-021-00693-8
109 Out of the total number of the 472 respondents, 140 (30%) have signalled problems in the community requiring collective action, in the form of disputes/ disagreements. Based on this general view, the 4 most predominant sources of disputes selected by the respondents include: access, allocation, use of water resources (73.57%), the manifestation of violent behaviours (30.00%), land ownership related factors between farmers and pastoralists (34.29%), and access and use of land for cop and livestock production (28.57%).
110 Professor Dr. Shukri Al Hasan
111 These climate data are currently being revised and compared with local data, and will be expanded at design stage.
112 WFP. (2016). Comprehensive Food Security and Vulnerability Analysis (CFSVA).
113 Iraq 21 Middle East Sea Level Risks, Global Warming Art License, 2007. In: Zakaria S. et al (2013) Historical and future climate change scenarios for temperature and rainfall for Iraq. Journal of Civil Engineering and Architecture, Vol 7, Nº12 (Serial Nº 73).
114 WB. 2019b
115 Climate Change profile in Iraq.
116 The final target means the target at the end of project/programme implementation period. However, for core indicator 1 (GHG emission reduction), please also provide the target value at the end of the total lifespan period which is defined as the maximum number of years over which the impacts of the investment are expected to be effective.

117 CFSVA 2016, WFP, FAO and Government of Iraq / Data on Food Security Zones taken from Iraq Socio-Economic Atlas, WFP (2019)
118 Emission factor taken from World Bank, 2019. Project Appraisal Document on a proposed loan in the amount o USD 200 million to the Republic of Iraq for an electricity services reconstruction and enhancement project
119 Source: Ministry of Agriculture (2019(. Prepared by the project´s team.
120 There are also several small-scale installations with much lower total capacity
[121] https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@arabstates/@ro-beirut/documents/publication/wcms_850359.pdf
[122] https://cosit.gov.iq/documents/population/demographic/reports/UNESCO-EU%20LMS%20Report_Agriculture_20022019.pdf
123 The efficiencies for current and future irrigation scenarios in the target governorates are available in Appendix 19 of Annex 2.
124 Stakeholders, i.e. ministries, departments, and line agencies, were initially identified through discussions with the NDA. Subsequently, during project formulation, the project was subject to a broad consultation process that included the mapping and involvement of other stakeholders for implementation, including on management and technical leadership (see Annex 7 for further details)..
125 Annex 2 contains the following Appendixes:
Appendix 1. Chronology of major events in the Euphrates–Tigris River Basin
Appendix 2: Future Water Quality & Quantity (2035)
Appendix 3. Water resources of main aquifer zones of Iraq
Appendix 4. Total dynamic reserves of water in three categories
Appendix 5. Groundwater level in Iraq
Appendix 6: Groundwater salinity maps of Iraq
Appnedix 7: Spatial variations of groundwater salinity in Iraq
Appendix 8: Recommended new dams in Iraq
Appendix 9: Water balance in the marshes under average hydrologic conditions in 2035
Appendix 10: Number of groundwater wells drilled in each Governorate in Iraq
Appendix 11: Details of Irrigation Projects in Iraq
Appendix 12: Schematic of Iraq’s water storage and control system
Appendix 13: Agro-climatic zones
Appendix 14: Iraq crop yields (2019)
Appendix 15: Top 20 imported agricultural products in Iraq (2019)
Appendix 16: Top 20 exported agricultural products in Iraq (2019)
Appendix 17: Preliminary design
Appendix 18: Preliminary Maintenance Plan PV pumping system
Appendix 19: Irrigation efficiencies for current and future scenarios in the target governorates
Appendix 20: Preliminary feasibility and cost estimations

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

Republic Of Iraq
Ministry Of Environment
INTERNATIONAL ENVIRONMENTAL RELATIONS DEPARTMENT

جمهورية العراق
وزارة البيئة
قسم علاقات البيئة الدولية

وزارة البيئة مكتب الوزير الصادر

No : العدد : و ف / ٢ / ٥٠٤
Date : 6/ /2022 التاريخ : ٦/ ٤/ ٢٠٢٢

To: The Green Climate Fund ("GCF")

Re: Funding proposal for the GCF by the Food and Agriculture Organization of the United Nations (FAO) regarding *Strengthening Climate Resilience of Vulnerable Agriculture Livelihoods in Iraq*

Dear Madam, Sir,

We refer to the project titled "Strengthening Climate Resilience of Vulnerable Agriculture Livelihoods in Iraq" in the Republic of Iraq as included in the funding proposal submitted by FAO to us on April/6/2022.

The undersigned is the duly authorized representative of Ministry of Environment, the National Designated Authority of the Republic of Iraq.

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

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

1. The government of the Republic of Iraq has no-objection to the project as included in the funding proposal;
2. The project as included in the funding proposal is in conformity with the national priorities, strategies and plans of the Republic of Iraq;
3. 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.

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Baghdad - Alwaziriya - Almaghreb Square

Republic Of Iraq
Ministry Of Environment
INTERNATIONAL ENVIRONMENTAL RELATIONS DEPARTMENT

جمهورية العراق
وزارة البيئة
قسم علاقات البيئة الدولية

No : 52 / 1301
Date : / /2022

وزارة البيئة
مكتب الوزير
الصادر

العدد : و ف / ٢ / ٥٢٤
التاريخ : ٦ / ٤ / ٢٠٢٢

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.

الدكتور
جاسم عبد العزيز حمادي
الوكيل الفني
المخول بصلاحيات وزير البيئة

Dr. Jasim Abdulazeez Hammadi
Minister of Environment
NDA of GCF in Iraq
April, 6 ,2022

نسخة منه الى /
- مكتب الوكيل الفني / للتفضل بالاطلاع...مع التقدير.
- قسم علاقات البيئة الدولية/ شعبة المتابعة / للمتابعة مع الاوليات .

4/6/2022

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

Basic project or programme information	
Project or programme title	Strengthening climate Resilience of Vulnerable Agriculture Livelihoods in Iraq (SRVALI)
Existence of subproject(s) to be identified after GCF Board approval	Yes
Sector (public or private)	Public
Accredited entity	Food and Agriculture Organization of the United Nations (FAO)
Environmental and social safeguards (ESS) category	Category B
Location – specific location(s) of project or target country or location(s) of programme	Karbala, Muthanna, and Najaf, Republic of Iraq
Environmental and Social Impact Assessment (ESIA) (if applicable)	
Date of disclosure on accredited entity's website	Friday, September 20, 2024
Language(s) of disclosure	English and Arabic
Explanation on language	Arabic is the national language of Iraq, which is a language understandable to affected peoples/stakeholders.
Link to disclosure	English: https://openknowledge.fao.org/items/916c3732-46bd-481c-a4cf-d737d9360f2d Arabic: https://openknowledge.fao.org/items/e1121bbe-879e-4398-99e1-ab495ae45e36
Other link(s)	FAO Resources: https://www.fao.org/iraq/resources/en/ FAO Disclosure Portal: https://www.fao.org/environmental-social-safeguards/disclosure/en
Remarks	An ESIA consistent with the requirements for a Category B project is contained in the "Annex 6: Environmental and Social Management Framework (ESMF)".
Environmental and Social Management Plan (ESMP) (if applicable)	
Date of disclosure on accredited entity's website	Friday, September 20, 2024
Language(s) of disclosure	English and Arabic
Explanation on language	Arabic is the national language of Iraq, which is a language understandable to affected peoples/stakeholders.
Link to disclosure	English: https://openknowledge.fao.org/items/916c3732-46bd-481c-a4cf-d737d9360f2d

	Arabic: https://openknowledge.fao.org/items/e1121bbe-879e-4398-99e1-ab495ae45e36
Other link(s)	FAO Resources: https://www.fao.org/iraq/resources/en/ FAO Disclosure Portal: https://www.fao.org/environmental-social-safeguards/disclosure/en
Remarks	An ESMP consistent with the requirements for a Category B project is contained in the "Annex 6: Environmental and Social Management Framework (ESMF)".
Environmental and Social Management System (ESMS) (if applicable)	
Date of disclosure on accredited entity's website	N/A
Language(s) of disclosure	N/A
Explanation on language	N/A
Link to disclosure	N/A
Other link(s)	N/A
Remarks	N/A
Any other relevant ESS reports, e.g. Resettlement Action Plan (RAP), Resettlement Policy Framework (RPF), Indigenous Peoples Plan (IPP), Indigenous Peoples Planning Framework (IPPF) (if applicable)	
Description of report/disclosure on accredited entity's website	N/A
Language(s) of disclosure	N/A
Explanation on language	N/A
Link to disclosure	N/A
Other link(s)	N/A
Remarks	N/A
Disclosure in locations convenient to affected peoples (stakeholders)	
Date	Friday, September 20, 2024
Place	The documents will be made available in the following places: **FAO Representation in Iraq** UN Compound/Green Zone Diwan Building Baghdad, Iraq **Karbala office** Governorate street, Governorate complex, building next to the governor office, 2nd floor, Karbala city, Karbala Governorate, 56001 **FAO Basra office** – UNICEF Compound/Basra <u>National Level</u> **Ministry of Water Resources** – Palestine Street – ministries complex, in front of Mortal Monument Baghdad,

	Iraq the below departments sharing the same address at HQ -Minister's Office: waterresmin@mowr.gov.iq -Technical deputy Office: technical-deputy@mowr.gov.iq -Planning and Follow-up office: p.f.dep@mowr.gov.iq -Legal and Contracts office: legalcontracts@mowr.gov.iq -Administrative and Financial office: financial.dep@mowr.gov.iq General commission for Irrigation and Reclamation Projects: Baghdad-Al-Adhamiya-Al-Rabie District-District 342-Street 46, Sadr Al-Qana Complex. al_esteslah@mowr.gov.iq General commission for Irrigation and Drainage Projects Baghdad – Karrada general-director09@mowr.gov.iq Center for Engineering Studies and Designs: Baghdad – Adhamiya – Al-Rabie District – Shop 342 – Street 46 – Sadr Al Canal Complex csed_office@mowr.gov.iq **Ministry of Agriculture -** Nidhal Street, Karrada Kharedge, Baghdad. The below Dept sharing the same address at HQ -Minister's Office: minister_office@zeraa.gov.iq -Technical deputy Office: info@zeraa.gov.iq -Planning and Follow-up office: info@zeraa.gov.iq Agricultural extension and training office: Abu Ghraib city, close to Agriculture College, Baghdad agri_extension@zeraa.gov.iq <u>Governorate level</u> **Governor offices** Najaf: Kofa Street, Najaf Governorate Karbala: Karbala city, Karbala Governorate, 56001 Muthanna: Governorate street, Samawah city, Al Muthanna Governorate **Directorate of water resources (MOWR)** Najaf: Falah Street, Kofa city, Najaf governorate Karbala: Jamiah street, Karbala city, Karbala Governorate, 56001 Muthanna: Bazarkarrah street, Samawah city, Muthana governorate

	Directorate of agriculture (MOA) Najaf: Falah Street, Kofa city, Najaf Governorate Karbala: Jamiah street, Karbala city, Karbala Governorate, 56001 Muthanna: Governorate street, Samawah city, Muthana governorate <u>District level</u> Divisions of water resources Najaf - Almishkhab, Najaf - -Diwaniya street Karbala - Alhusainiyah subdistrict Muthanna- Rumaitha tourist street Division of Agriculture Najaf - Almishkhab, Samawa- Najaf street Karbala - Alhusainiyah subdistrict Muthanna - Rumaitha tourist street
Date of Board meeting in which the FP is intended to be considered	
Date of accredited entity's Board meeting	N/A
Date of GCF's Board meeting	Monday, October 21, 2024

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

Secretariat's assessment of FP249

Proposal name:	Strengthening Climate Resilience of Vulnerable Agriculture Livelihoods in Iraq (SRVALI)
Accredited entity:	Food and Agriculture Organization of the United Nations
Country:	Republic of Iraq
Project/Programme size:	Small

I. Overall assessment of the Secretariat

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

Strengths	Points of caution
Addresses critical climate vulnerabilities in Iraq's agriculture sector, focusing on water scarcity, irrigation efficiency and climate-resilient farming practices, with large reach and impacts over 1.9 million total beneficiaries, nearly 1 million of them women.	Security and governance challenges in Iraq could impact implementation.
Comprehensive approach combining infrastructure investments, capacity-building and policy reforms across the water, agriculture and energy sectors to create market opportunity and private sector engagement. The adoption of Information Communication Technology for Climate Change (ICT4CC). and e-extension systems can stimulate the growth of technology markets focused on agriculture and climate resilience.	Policy/regulatory reforms needed to enable and sustain changes.
Strong economic rationale – 16 per cent economic rate of return and USD 48.6 million net present value.	Economic benefits depend on adoption rates and climate impacts materializing as projected.
The project directly supports Iraq's nationally designated contributions by enhancing institutional and farmer resilience to climate change and aiming to reduce carbon dioxide emissions by approximately 1.34 million tonnes over 20 years.	Risks related to future identification of Indigenous Peoples.

2. The Board may wish to consider approving this funding proposal in accordance with the term sheet agreed between the Secretariat and the accredited entity (AE), and, if considered appropriate, subject to the conditions set out in annex II to document GCF/B.40/02.

II. Summary of the Secretariat's assessment

2.1 Project background

3. Iraq faces significant threats from climate change, particularly impacting its agriculture sector. The Strengthening Climate Resilience of Vulnerable Agriculture Livelihoods in Iraq (SRVALI) project proposed by the Food and Agriculture Organization of the United Nations (FAO) aims to enhance the climate resilience of vulnerable agricultural livelihoods through integrated and sustainable approaches. The project's overall objective is to build long-term resilience in the agriculture sector, focusing on the most vulnerable communities and promoting sustainable agricultural practices.

4. Iraq's agriculture sector is a crucial part of its economy and food security but is highly vulnerable to climate change impacts such as increased temperatures, altered precipitation patterns and more frequent extreme weather events. These changes threaten crop yields, water resources and the livelihoods of millions of people reliant on agriculture.

5. The total cost of the project is USD 38.95 million, with a GCF investment of USD 29.25 million in grants.

6. The project aims to benefit 1,044,800 people directly and 913,334 people indirectly. These include smallholder farmers, pastoralists and rural communities, who are most at risk from the adverse effects of climate change.

7. The environmental and social safeguards (ESS) category for this project is B.

2.2 Component-by-component analysis

Component 1: Strengthening resilience against climate-induced water scarcity (total cost: USD 27.05 million; GCF cost: USD 23.22 million in grants)

8. Component 1 aims to tackle water scarcity and variability exacerbated by climate change through strategic interventions in irrigation infrastructure and renewable energy systems. The project focuses on irrigation efficiency and water optimization, avoiding technologies that increase water extraction through converting selected canals to piped systems. This option appeared to be the most efficient and effective in dealing with climate change and was also the most feasible from a financial perspective. This approach offers advantages such as equal water distribution, reduced groundwater pumping and evaporation and lower operational costs.

Component 2: Climate resilient agriculture production (total cost: USD 7.03 million; GCF cost: USD 3.11 million in grants)

9. This project component addresses barriers faced by farmers in adopting climate-resilient farming practices, such as a lack of awareness about efficient irrigation, crop water requirements and appropriate crop mixes, compounded by limited knowledge of improved market inputs owing to outdated public sector extension services. To overcome these issues, the project will upgrade the skills of extension agents and farmers by providing training, organizing local farmers community and encouraging lead farmers to demonstrate adaptive practices. Additionally, local forums and networks will facilitate ongoing interaction with the private sector. The Farmer Field School methodology, deemed the most efficient for implementing

adaptive practices, will be employed, as it has successfully fostered greater interaction among farmers, extension agents and the private sector in past projects.

Component 3: Scaling-up climate adaptation through policy formulation and planning (total cost: USD 1.28 million; GCF cost: USD 0.38 million in grants)

10. Component 3 focuses on developing a robust climate-resilient policy aimed at enhancing water efficiency in agriculture, which can be replicated nationwide. Additionally, it will establish a road map for solar-powered rural electrification, aligning with Iraq's Integrated National Energy Strategy. This component aims to strengthen the strategic and legal frameworks for water management and the adoption of climate-resilient technologies.

Project management (total cost: USD 1.73 million; GCF cost: USD 0.91 million in grants)

11. This activity refers to the support provided to a dedicated project management unit (PMU), which is responsible for overseeing day-to-day execution activities under all components, including procurement and financial management. The PMU also conducts regular monitoring and evaluation of all activities implemented by the project.

III. Assessment of performance against investment criteria

3.1 Impact potential *Scale: N/A*

12. The project aims to significantly enhance climate resilience in Iraq's agriculture sector, directly benefiting benefit 1,044,800 people.

13. By focusing on sustainable agricultural practices, improved water management and infrastructure development, the project targets the most vulnerable communities. These interventions are expected to result in increased agricultural productivity, improved food security and enhanced livelihoods, which are critical for the economic and social stability of Iraq.

14. Increased agricultural productivity will be achieved through the adoption of climate-resilient practices such as the use of drought-resistant crop varieties and improved soil management techniques. These practices will help farmers to maintain and even increase their yields despite the challenges posed by changing climatic conditions. Improved food security will come from both increased productivity and the development of storage facilities to reduce post-harvest losses, ensuring that food remains available even during periods of scarcity.

15. Enhanced livelihoods are another key outcome, as the project provides training and resources to farmers, empowering them to adopt sustainable practices and improve their economic resilience. The focus on the most vulnerable communities ensures that the benefits of the project are equitably distributed, targeting those who need it most. This holistic approach not only addresses immediate needs but also builds long-term resilience, making communities more self-sufficient and better prepared for future climate challenges.

16. Overall, the impact potential of the SRVALI project is substantial. By directly benefiting 1,044,800 people and indirectly supporting many more, the project represents a significant investment in Iraq's future. It addresses multiple dimensions of climate resilience, from individual farmers to national policy, creating a comprehensive framework for sustainable agricultural development.

3.2 Paradigm shift potential *Scale: N/A*

17. The SRVALI project promotes a paradigm shift towards climate-resilient agriculture through its integrated approach, combining policy support, capacity-building and community engagement. This shift is essential for Iraq, where traditional agricultural practices are increasingly unsustainable in the face of climate change. By introducing innovative, climate-resilient practices, the project aims to transform the agriculture sector, setting a precedent for future development initiatives.

18. One of the key elements of this paradigm shift is the integration of traditional knowledge with modern practices and technologies. The project recognizes the value of local knowledge and seeks to combine it with scientific research and technological innovation. This approach not only ensures the relevance and acceptability of new practices but also promotes their sustainability by building on existing knowledge and skills.

19. The project also emphasizes the importance of multi-stakeholder engagement, bringing together government agencies, non-governmental organizations and community organizations. This collaborative approach ensures that diverse perspectives and expertise are incorporated into project design and implementation, enhancing the effectiveness and sustainability of interventions. It also fosters a sense of ownership among stakeholders, increasing their commitment to the project's success.

20. The potential for replication and scaling up is another critical aspect of the project's paradigm shift potential. By demonstrating the effectiveness of climate-resilient agricultural practices in Iraq, the project can serve as a model for other regions facing similar challenges. The lessons learned and best practices developed through SRVALI can be shared and adapted, contributing to a broader transformation towards climate resilience in the agriculture sector.

3.3 Sustainable development potential *Scale: N/A*

21. The SRVALI project contributes significantly to Sustainable Development Goals (SDGs) 2 (Zero hunger) and 13 (Climate action) by enhancing food security, improving livelihoods and reducing climate vulnerability in Iraq's agriculture sector. The project's focus on sustainable agricultural practices and improved water management directly addresses the root causes of food insecurity and climate vulnerability, providing long-term solutions that benefit both people and the environment.

22. The project's contribution to SDG 2 is particularly noteworthy. By increasing agricultural productivity and reducing post-harvest losses, the project helps to ensure a stable and sufficient food supply. This is crucial for a country like Iraq, where food insecurity remains a significant challenge. The project's emphasis on training and capacity-building also empowers farmers, providing them with the knowledge and skills needed to maintain and improve their livelihoods.

23. In addition to SDG 2, the project supports SDG 13 by promoting climate-resilient agricultural practices and enhancing water management systems. These interventions help communities to adapt to the impacts of climate change, reducing their vulnerability and increasing their resilience. The project's focus on capacity-building and policy support also strengthens institutional frameworks for climate action, ensuring that climate resilience is integrated into national development plans and strategies.

24. Beyond SDGs 2 and 13, the project contributes to other goals such as SDG 6 (Clean water and sanitation) and SDG 15 (Life on land). Improved water management systems enhance water availability and quality, supporting both agricultural and domestic needs. Sustainable land management practices, such as soil conservation and agroforestry, help to preserve ecosystems and biodiversity, contributing to the overall health and sustainability of the environment.

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

25. Iraq's agriculture sector is highly vulnerable to climate change, with limited resources to adapt. The SRVALI project addresses critical gaps in capacity, infrastructure and policy, providing much-needed support to vulnerable communities. The project's focus on the most vulnerable communities ensures that the benefits are equitably distributed, targeting those who need it most and helping to reduce inequalities.

26. One of the key needs addressed by the project is the lack of climate-resilient infrastructure. The construction of water harvesting structures, irrigation systems and storage facilities provides the necessary infrastructure to support climate-resilient agriculture. These interventions help to ensure a reliable water supply, reduce post-harvest losses and improve overall agricultural productivity, addressing the immediate needs of farmers and rural communities.

27. Capacity-building is another critical need addressed by the project. Many farmers lack the knowledge and skills needed to adopt climate-resilient practices. The project's training programmes and technical assistance provide farmers with the tools they need to improve their practices and increase their resilience. This focus on capacity-building ensures that the benefits of the project are sustainable, as farmers are empowered to continue improving their practices even after the project ends.

28. Policy support is also a key component of the project's approach. By developing and updating climate risk informed agricultural policies, the project helps to create an enabling environment for climate-resilient agriculture. This support is essential for ensuring that the benefits of the project are integrated into national development plans and strategies, enhancing the overall resilience of Iraq's agriculture sector.

3.5 Country ownership *Scale: N/A*

29. The SRVALI project aligns with Iraq's national climate strategies and priorities, demonstrating strong country ownership. The project has received substantial support from the government and key stakeholders, ensuring effective implementation and sustainability. This alignment with national priorities ensures that the project is relevant and addresses the most pressing needs of the country.

30. The involvement of local communities and institutions in project design and execution further enhances country ownership. By engaging local stakeholders in the planning and implementation process, the project fosters a sense of ownership and commitment. This participatory approach ensures that the interventions are tailored to local needs and conditions, increasing their effectiveness and sustainability.

31. The project's alignment with national climate strategies and priorities is evident in its focus on climate-resilient agriculture, which is a key priority for Iraq. The project's emphasis on capacity-building and policy support also aligns with national efforts to strengthen institutional frameworks for climate action. This alignment ensures that the benefits of the project are integrated into national development plans and strategies, enhancing the overall resilience of Iraq's agriculture sector.

32. The strong support from the government and key stakeholders is also reflected in the project's implementation arrangements. FAO, as the AE, has a strong track record of working with the government and local institutions in Iraq. This partnership ensures that the project is implemented effectively and that the benefits are sustainable, contributing to the long-term resilience of Iraq's agriculture sector.

33. No-objection letters have been issued by the country, confirming this support.

3.6 Efficiency and effectiveness *Scale: N/A*

34. The SRVALI project presents a cost-effective approach to building climate resilience, with substantial benefits relative to the investment. The project's design includes a combination of infrastructure development, capacity-building and policy support, ensuring a holistic and integrated approach to climate resilience. This comprehensive approach maximizes the impact of the investment, ensuring that the benefits are sustainable and long-lasting.

35. The economic internal rate of return for the project is favourable, indicating strong economic viability. The project's interventions are designed to generate substantial economic benefits, including increased agricultural productivity, improved food security and enhanced livelihoods. These benefits contribute to the overall economic stability and development of Iraq, justifying the investment in the project.

36. The project's design also includes mechanisms for adaptive management, allowing for adjustments based on monitoring and feedback. This flexibility ensures that the project remains effective and responsive to changing conditions and needs. The robust monitoring and evaluation framework included in the project design ensures that progress and outcomes are tracked, providing valuable insights and lessons learned for future interventions.

37. Efficiency and effectiveness are further enhanced by the project's participatory approach, which ensures that interventions are tailored to local needs and conditions. By engaging local stakeholders in the planning and implementation process, the project ensures that the interventions are relevant, effective and sustainable. This participatory approach also fosters a sense of ownership and commitment among stakeholders, increasing their support for the project and its objectives.

IV. Assessment of consistency with GCF safeguards and policies

4.1 Environmental and social safeguards

38. Project overview. The project aims to enhance the climate resilience of rural households by supporting climate adaptive infrastructure (such as improvement of irrigation canals), promotion of technologies and practices (such as use of salt and drought-tolerant crop varieties) to increase the availability and efficiency of water use that will increase agriculture yields of farming households. The project’s environmental and social co-benefits include better land use management through nature-based solutions such as the use of shelterbelts, reversing desertification through water conservation, and reduced use of pollutants such as chemical fertilizers and pesticides. The use of over-canal solar PV arrays bring about co-benefits on reduced air pollution, cooler microclimate next to the canal, slower evaporation and potentially mitigating growth of aquatic weeds. Among the social co-benefits include better health due to improved air quality and reduced instances of conflicts over water use due to a more equitable distribution for end users.

39. Environmental and social (E&S) risk category and safeguard instrument. The AE has classified the project as Category B. The project will involve upgrading of existing irrigation canals, installation of canal-top PV systems, capacity building, extension program on climate-resilient agricultural production, and policy formulation. Potential adverse environmental and social impacts are mostly linked to infrastructure works. These impacts are localized, reversible and non-cumulative, and can be mitigated through standard measures and best practices. The Secretariat agrees with the categorization, and it is within the AE’s accreditation level. The AE has prepared an Environmental and Social Management Framework (ESMF). Although the sites for the irrigation canal upgrading and solar PV installation have been identified, the detailed

engineering design of these structural enhancements will only be undertaken during the project implementation in discussion with the stakeholders.

40. Compliance with GCF's Environmental and Social Safeguards (ESS) standards. The paragraphs describe how the project complies with the standards.

41. **ESS1: Assessment and Management of Environmental and Social Risks and Impacts.** The ESMF provides a general E&S assessment for the project, identifying triggers of AE's E&S policies, potential risks, and impacts and corresponding mitigation measures, and setting out the requirements, responsibilities, and procedure for assessing and managing E&S risks and impacts of the subprojects/site-specific activities. Measures include the adoption and application of a Non-Eligibility List; close consultation with stakeholder on the detailed design; subjecting each site-specific activity to the AE's E&S screening checklist to determine risk category and type of safeguard instrument or the level of E&S assessment to be conducted; and providing for a process of the preparation, review, and clearance of the activity's environmental and social management plan (ESMP). The mitigation measures and requirements will be in line with FAO and GCF ESS policies and standards and will consider current binding legislations/government regulations, whichever is most stringent. The ESMF also describes the stakeholder engagement, and the procedure and process for dealing with complaints, through the Grievance Redress Mechanism.

42. **ESS2: Labor and Working Conditions.** Labor and working condition standards are addressed under the AE's ESS 4 (Decent Work) which the AE has triggered, noting that the project will generate employment and that the project operates in areas with high occurrences of vulnerabilities. To mitigate labor risks such as unfair employment and the risk of child labor identified under this standard, measures such as encouraging the use of local labor inputs as much as practicable and prohibiting admission of children employees or underage workers to construction site by applying age verification before the employment of workers are proposed. In terms of occupational health and safety, the following were mentioned; (i) Compliance with general rules and regulations on OHSR; (ii) Ensure workers are equipped with protective gear (e.g. helmets, boots, gloves, masks, and earplugs); (iii) Ensure the availability of first aid kit at work sites and necessary information on rescue during emergency; (iv) Ensure workers are trained on OHSR risk prevention and management on site; (iv) Make barrier around any excavation and install warning signs to prevent passers-by and animals from falling in; (v) adoption of guidance on prevention of communicable diseases such as COVID-19, as necessary. A further assessment of the labor requirements of the project will also be conducted at project commencement, to address potential gender-based and ethnicity-based (minorities) discrimination in employment; and risk of non-observance of, or violation of, basic rights, of workers hired through the project. If risks are deemed significant, management measures at the project level will be taken such as requiring contractors to prepare a Labor Management Procedure and/or an OSH Plan. Labor and working conditions involving harmful, exploitative, involuntary or compulsory forms of labor, forced labor, child labor or significant occupational health and safety issues are also excluded from funding under the project.

43. **ESS3: Resource Efficiency and Pollution Prevention**. In terms of resource efficiency, the project is expected to improve water availability and use efficiency through the minimization of evaporation and the use of prepaid water metering. The ESMF has identified potential pollution during construction period (principally in the form of increased sedimentation and generation of dust and concrete wastes) and has identified measures to prevent and/or mitigate these potential impacts. During operation, the solar panels will contribute to reduced air emission, principally GHG, but also air pollutant emissions due to displaced power capacity from fossil fuel power plants. The covering/shading of canals has also been found to result to a lower total dissolve solid (TDS) concentration in irrigation water due to low evaporation. The shading also reduces the growth of algae. The project will not lead to

increased use of pesticides through intensification or expansion of production but rather promote integrated pest management practices.

44. **ESS4: Community Health, Safety and Security**. Construction works and maintenance activities of solar panels on canals and construction and maintenance of buried irrigation pipes pose hazards to the host communities. These are being mitigated by adopting standard practices as provided in the ESMF. An Operation and Maintenance Manual will also be prepared including provision of training to DoWR and WUAs and the technical staff related to design, installation and maintenance of irrigation, drainage and energy technologies. As regards potential for worker influx during construction which may increase incidence of criminality affecting the security of residents in the project communities, the project will aim at recruiting all workers in project areas thus minimizing or avoiding the influx of male workers in the project areas. The project may also lead to possible exacerbation of disputes and conflict over water which is the most prevalent source of dispute/disagreements in the area. The project aims to mitigate this by having constant coordination with the stakeholders across institutions and communities to effectively and efficiently implement the project thus also averting conflict-related issues. None of the irrigation canals identified for upgrading under the project is expected to be associated with large dams as the canals will be situated way downstream of the Euphrates river.

45. **ESS5: Land Acquisition and Involuntary Resettlement.** The project will not require or result to any involuntary resettlement or physical displacement. The ESMF reports that one of the criteria for the selection of canals to be upgraded under the project is the absence of any need for land acquisition, resettlement, or relocation. The upgrade of identified infrastructures (i.e. irrigation canals) will not cause changes in their existing location or dimensions. Moreover, as per the Non-Eligibility List, the following activities are not eligible for funding under the project: a. relocation and/or demolition of any permanent houses or business; b. use of the project as an incentive and/or a tool to support and/or implement involuntary resettlement of local people and village consolidation; c. land appropriation; d. land acquisition using eminent domain without FAO-mandated consultation and agreement of the owner; and e. new settlements or expansion of existing settlements.

46. **ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources.** The ESMF provides an overview of Iraq's biodiversity, emphasizing its richness and the severe stress it has endured due to conflicts and various projects on agricultural lands. The ESMF indicates that the project will not significantly impact biodiversity and natural habitats since the canals to be upgraded are within existing agricultural areas. Hence, it does not foresee or cause expansion of irrigated lands. While the agricultural extension program (Component 2) will have potential for inadvertent introduction of invasive species into the farms, the project will avoid these by banning the use of non-native species in the extension effort. This is reflected in the Non-Eligibility List which explicitly exclude from funding sub-activities that involve "introduction of non-native species, unless these are already present in the vicinity or known from similar settings to be non-invasive" and “activities of any kind within natural habitats and existing or proposed protected areas.”

47. **Indigenous Peoples Policy and ESS 7 (Indigenous Peoples).** The AE confirmed that the project area does not contain any Indigenous Peoples, nor will they be affected by the project's activities.

48. **ESS8: Cultural Heritage.** The project will avoid known sites by requiring that the selection of canals for upgrade, and layout of the selected distributary canals and their watercourses and their rights of way, to be not in the vicinity of/have any impact on physical cultural resources. The Non-Eligibility List also specifies the exclusion from funding any activity that would damage or result to a loss to cultural property, including sites having archaeological (prehistoric), paleontological, historical, religious, cultural, and unique natural values. In case of

chance discovery of physical cultural resources, protocols based on local and national regulations will be followed.

49. **Implementation Arrangements**. An Environmental and Social Safeguards (ESS) Specialist will be hired within the Project Management Unit (PMU) for the project's duration. The ESS Specialist will ensure overall compliance with the ESMF, engage with stakeholders, incorporate feedback, and ensure stakeholders' capacity to implement ESMPs through capacity building as necessary. The ESS Specialist will also support safeguard performance monitoring, manage grievance redress, and oversee sub-activity screening and ESMP preparation. The PMU, with oversight from FAO-Iraq and technical support from the FAO Regional Office, will monitor project activities and will track performance at national and Governorate levels. Executing entities will be requested to collect and submit reports to the PMU, which will subsequently prepare consolidated annual reports.

50. **Stakeholder engagement.** The project was developed with the involvement of stakeholders. Various bilateral consultation meetings and workshops were held, including three national-level workshops with key stakeholders. The project also held meetings with key local stakeholders, including WUA members to discuss key activities for project involvement. A Stakeholder Engagement Plan (SEP) has been prepared which summarizes the consultations so far conducted and set out the plan for further stakeholder engagements during the project implementation. As per the SEP, the stakeholder engagements during the project implementation would consist of Annual Work Plan and Budget (AWPB) consultations both at the community levels and at the national level. The purpose of these AWPB consultations is to review the work undertaken in the previous fiscal year, assess if activities are on track, validate results, and identify, if necessary, any modifications that need to be made during implementation.

51. **Grievance redress mechanism (GRM).** The ESMF has outlined a grievance redress mechanism (GRM) for the project which will be implemented at the field level to address complaints. Contact information and instructions for filing complaints will be provided during all project-related meetings and events, as well as through awareness-raising materials. The Project Management Unit (PMU) will manage grievances related to environmental and social standards, with the PMU Project Coordinator responsible for documenting and reporting on received grievances and their resolutions. Unresolved complaints at the field can be escalated to the FAO Iraq Representation, the FAO Regional Office for Near East and North Africa, and ultimately, the FAO Office of the Inspector-General. All interactions and resolutions will be thoroughly documented.

52. **Sexual Exploitation, Sexual Abuse, and Sexual Harassment (SEAH) safeguarding.** The SEAH safeguards incorporated by the AE as part of the project's ESMF is considered complies with SEAH provisions of the GCF Revised Environmental and Social Policy. The ESMF has identified the potential gender-based violence (GBV) and SEAH risks linked to the overall nature of the project and its implementation. Given the high contextual SEAH risks present in the host country, the AE has devised a robust safeguarding approach in the ESMF to ensure the SEAH risks are identified, assessed, prevented and managed throughout the project. The ESMF considers the link between women's empowerment and gender violence and highlights SEAH-specific risks, such as the lack of a strong legal system to enforce laws and low levels of prosecution for SEAH incidents. Additionally, it emphasizes the limited availability of SEAH protection services in the project areas and the high rates of femicide and sexual violence. The AE acknowledges the potential for women's participation or employment in the project may exacerbate the existing forms of SEAH. To address these concerns, the AE has developed a SEAH risk mitigation matrix and explicitly outlined safeguarding measures, such as working with local officials to launch campaigns on SEAH prevention, leveraging existing relationships with government stakeholders, identifying champions, supporters, and change-makers within the government on SEAH, conducting SEAH awareness-raising and sensitization campaigns in the

community, and providing information to the community about SEAH risks, SEAH reporting and GRM, and available services. The ESMF emphasizes on the strong enforcement of AE's SEAH policy, SEAH related laws in the host country, and liaising with institutional stakeholders to provide services to SEAH survivors. In addition to following the AE's own policy requirements on SEAH prevention that will be followed, the ESMF requires addressing SEAH related complaints in an accessible, inclusive, survivor-centred and gender-responsive manner with specific procedures for SEAH, including confidential reporting with safe and ethical documenting of such cases, that indicate when and where to report incidents, and what follow-up actions will be undertaken

4.2 Gender policy

53. The AE provided a gender assessment and action plan with the funding proposal and therefore complies with the requirements of the GCF Gender Policy. The assessment provides a detailed overview of the socioeconomic situation of rural women in Iraq, their political participation, the legal status of women, national policies and strategies related to gender, gender-based violence, the impact of the coronavirus disease 2019 pandemic, gender norms and the intersection of climate change and gender. Based on the findings of the gender assessment, the gender action plan outlines specific activities aimed at addressing the gender gaps identified in the assessment and that are relevant to the project.

54. In order to strengthen the resilience and livelihoods of vulnerable individuals, communities and regions from a gender perspective, the gender action plan outlines three main components to address gender-related constraints. In order to strengthen the resilience and livelihoods of vulnerable individuals, communities and regions from a gender perspective, the gender action plan outlines strategies to address gender-related constraints. The AE will implement gender-responsive and inclusive capacity-building for technical staff. This will include training on gender issues and the development of gender-responsive training modules to address the needs and challenges of women farmers in relation to solar energy in agricultural production and water-saving technologies. In addition, the project will build women's capacity; it has outlined gender transformative indicators to measure the impact of these capacity-building initiatives. A social norms assessment and social and behavioural change communication strategy will also address sociocultural barriers, which vary across different governorates and communities. A gender-responsive terms of reference will be developed for the Service Provider, outlining how gender considerations will be integrated into their work. To effectively implement these activities, a gender specialist will be hired to work closely with other project staff members.

55. The AE will provide training in climate-resilient technologies aimed at alleviating women farmers workload. Women will have access to new technologies and training programmes to adopt time-saving, locally developed innovative practices. Additionally, under the Climate-Resilient Agriculture programme of Iraq, there will be a sensitization phase to establish women's exchange groups and women will be actively engaged in consultations regarding any potential increase in their work burden. Regular evaluations of the pilot programme will be conducted to assess outcomes and identify best practices that are innovative and feasible for beneficiaries, without exacerbating work burdens. To address gender-based violence, the AE will apply several mechanisms, including dedicated sections on gender-based violence in the gender mainstreaming training for beneficiaries, Government officials' staff and other relevant stakeholders. All staff members of the project will receive Prevention of Sexual Exploitation and Abuse (PSEA) training to address and mitigate gender-based violence. All activities outlined in the gender action plan are costed and budgeted for. The Secretariat recommends that the implementation of the gender activities for this project take an intersectional approach in order to understand the different complexities of vulnerabilities, privileges and how they interact with the intended outcomes outlined in the gender action plan.

4.3 Risks

4.3.1. Overall programme assessment (medium risk)

56. The project aims to enhance the climate resilience of vulnerable agricultural households in Iraq's rural communities in Najaf, Karbala, and Muthanna. The project will enhance climate resilience by addressing water and energy scarcity, promoting climate-smart agriculture, and developing policies for improved water management and climate adaptation technologies. Total project costs are estimated at USD 38.95 million. The total comprises a GCF grant of USD 29.252 million and USD 9.7 million from FAO and the Government of Iraq in the form of a grant and in-kind contributions- for a co-financing ratio of 1:0.33

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

57. FAO serves as the Accredited Entity (AE) for the project in Iraq, overseeing its execution through FAO-Iraq and collaborating with four ministries (Environment, Water Resources, Agriculture, and Electricity). While the ministries act as Executing Entities (EEs) for their respective in-kind co-financing, FAO signs subsidiary agreements with them to delineate roles and responsibilities. With a dedicated Project Management Unit (PMU) and technical experts, FAO ensures effective implementation, drawing from its extensive track record in similar contexts, including past collaboration with GCF on 20 projects. This experience shows strong track record and FAO's capacity to implement the project and navigate challenges, ensuring compliance with GCF policies, regulations and AMA, including the FAA fostering confidence from the Secretariat in the AE and its EEs capacity to execute the project activities.

4.3.3. Programme-specific execution risks (medium risk)

58. Security risk: The SRVALI project acknowledges the significant security risks associated with its implementation in Iraq. Given the volatile security environment and regional instability, there are inherent challenges that could impact project operations and personnel safety. The project's focus on rural areas such as Najaf, Karbala, and Muthanna helps mitigate some of these risks due to their generally lower security challenges, though escalating tensions in these regions remain a concern. To address these risks, FP outlines several effective mitigation strategies, including comprehensive risk assessment protocols, secure operational practices, and strategic local partnerships to enhance situational awareness. Prioritizing local staff and collaborating with local NGOs, alongside emphasizing areas with a history of stability and establishing clear communication protocols, further strengthens project resilience. These proactive measures are crucial for navigating Iraq's complex security context and ensuring the project's continuity while safeguarding both assets and personnel.

59. Co-financing: We acknowledge the sizable co-financing totaling USD 9,700,000 (USD 6.82 million in grants from FAO, USD 0.80 million in-kind from FAO, and USD 2.80 million in-kind from the Government of Iraq through MoWR and MoE, each acting as an Executing Entity), resulting in a co-financing ratio of 1:0.34. If co-financing does not materialize, this may impede project implementation. As such, covenants and conditions regarding the reporting of the co-financing status in the term sheet/FAA are considered adequate mitigation measures.

60. Project viability (and concessionality): The use of grants (i.e., 100 percent concessionality) is reasonable, as highlighted in the Funding Proposal, due to Iraq's compounded economic and environmental challenges. The proposal further reflects that Iraq has faced prolonged conflict, the influx of refugees, and the COVID-19 pandemic, all of which have significantly strained public resources. Moreover, the agriculture sector, which is crucial for employment and food security, is severely impacted by climate change, particularly water

scarcity and droughts. The Proposal indicates that Iraq has limited access to international climate finance and lacks the low-cost, long-term project debt necessary for large-scale climate adaptation investments. Given these factors, GCF grant funding is essential to support the country's transition to sustainable agricultural practices and to enhance resilience in vulnerable communities.

4.3.4. GCF portfolio concentration risk (low risk)

61. In the case of approval, the impact of this proposal on the GCF portfolio concentration in terms of results area and single proposal is immaterial.

4.3.5. Recommendation

62. It is recommended that the Board consider the above factors in its decision.

Summary risk assessment		Rationale
Overall programme	Medium	The funding proposal has an overall risk assessment of Medium based on the issues highlighted. It is recommended that the Board consider the above factors in its decision.
Accredited entity (AE)/executing entity (EE) capability	Medium	
Project-specific execution	Medium	
GCF portfolio concentration	Low	
Compliance	Medium	

4.3.6. Compliance risk (medium risk)

63. The compliance risk assessment is rated as medium risk, primarily because of concerns surrounding money-laundering and financing terrorism. Despite the rigorous FAO internal controls and policies to mitigate these risks, including annual fraud prevention plans and biannual risk log updates, the inherent risks associated with financial activities in complex environments like Iraq remain. The dynamic nature of financial crime risk necessitates continuous monitoring and robust risk management.

64. FAO adherence to anti-money-laundering and countering the financing of terrorism policies involves comprehensive due diligence and stringent measures to prevent money-laundering and financing terrorism. The inclusion of specific anti-money-laundering and countering the financing of terrorism clauses in the project agreement with the Government of Iraq, alongside thorough vetting of all persons and entities involved in the project, underscores the commitment to these standards. However, despite these proactive measures, the complexity of ensuring full compliance in every transaction and partnership within such a challenging environment contributes to the residual risk level.

65. FAO policies, such as the Vendor Sanctions Policy (Administrative Circular 2014/27) and Whistleblower Protection Policy (Administrative Circular 2011/05), provide a framework to address and mitigate prohibited practices. These mechanisms are comprehensive but highlight the inherent challenges in such environments. Measures include strict adherence to FAO's Administrative Circulars on fraud, corruption, and whistleblower protection, alongside robust grievance redress mechanisms. These controls are essential for maintaining compliance, yet the potential for prohibited practices in complex project settings like Iraq remains a contributing factor to the medium risk assessment. This underscores the need for continuous vigilance and adaptive management to uphold the integrity of the project.

4.4 Fiduciary

66. FAO will serve as the AE and will be responsible for overall oversight of the project. FAO, through its representation in Iraq, will be the EE of the GCF funds. The Ministry of Water Resources and the Ministry of Environment, representing the Government of Iraq, will act as EEs to implement their own in-kind co-financing.

67. The supervisory role of FAO as AE will be attributed to the FAO Regional Office for the Near East and North Africa in Cairo and relevant offices and divisions at FAO headquarters in Rome. FAO will ensure that the financial management and procurement of goods and services using GCF resources adheres to relevant FAO rules and regulations, as well as relevant provisions in the Accreditation Master Agreement between FAO and GCF.

68. Financial management and procurement executed by the FAO-Iraq Office as the EE will be overseen and supervised by the FAO-GCF project supervision team. The FAO-GCF project supervision team will undertake regular supervision missions and recruit a qualified, internationally recognized auditing firm to perform frequent spot checks and audits to ensure that financial management and procurement by the PMU and EEs are conducted in line with agreed standards and practices.

4.5 Results monitoring and reporting

69. The project's theory of change showcases the transformational pathway through which the project will generate adaptation and mitigation impact while contributing to important co-benefits. Two of the project outcomes focus on providing direct benefits to the vulnerable population regarding water security and climate-resilient agriculture practices, while the third outcome complements creating an enabling environment for national stakeholders to drive long-term policy development. The achievement of the longer-term impact rests on the critical assumptions noted in the theory of change relating to post-implementation operational capacity and infrastructure maintenance.

70. The logical framework has identified GCF indicators applicable to measure the results from the project's outcomes and outputs. As the project covers multiple mitigation and adaptation outcomes and results areas, the core and supplementary indicators proposed in the logical framework allow adequate coverage. The enabling environment and paradigm shift potential indicators selected by the AE are consistent with the requirements of the Integrated Results Management Framework. Moreover, the project-specific indicators proposed by the AE are complementary and will measure context-specific results.

71. The monitoring and evaluation plan submitted as part of the proposal package provides an overview of how the monitoring and evaluation will be operationalized, and the project will be reporting results as per the GCF monitoring and accountability framework. An adequate budget has been allotted to implement the various data collection and measurement tools while setting aside the budget for interim and final independent evaluations. In addition to the annual monitoring, the AE has proposed conducting a midline and endline survey, which will measure the various adaptation benefits that the direct and indirect beneficiaries receive.

4.6 Legal assessment

72. The Accreditation Master Agreement was signed with the AE on 8 June 2018, and it became effective on 4 October 2018. The five-year accreditation term of the AE lapsed on 3 October 2023 but was extended by decision B.37/18, paragraph (q), until three years from the date of the lapse of the five-year accreditation term or the date on which a revised accreditation framework is adopted by the Board, whichever is earlier. The Board approved the re-accreditation of the AE pursuant to decision B.37/18, and negotiation of the amended and restated Accreditation Master Agreement is ongoing.

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

74. The proposed project will be implemented in Iraq, a country in which GCF is not provided with privileges and immunities. This means that, among other things, GCF is not protected against litigation or expropriation in this country, which risks need to be further assessed.

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

76. To address the matters raised in this section, it is recommended that any approval by the Board be made subject to the following conditions:

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

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

Independent Technical Advisory Panel's assessment of FP249

Proposal name:	Strengthening climate Resilience of Vulnerable Agriculture Livelihoods in Iraq (SRVALI)
Accredited entity:	Food and Agriculture Organization of the United Nations
Country:	Republic of Iraq
Project/programme size:	Small

I. Assessment of the independent Technical Advisory Panel

1.1 Overview

1. The "Strengthening climate Resilience of Vulnerable Agriculture Livelihoods in Iraq (SRVALI)" project is a cross-cutting, small-scale, public-sector initiative designed for implementation over six years in Iraq, specifically targeting the southern governorates of Karbala, Muthanna and Najaf. These regions are among the most vulnerable to climate change in Iraq due to their arid climate, high levels of food insecurity, and increasing water scarcity. The project's main goal is to enhance the climate resilience of vulnerable agricultural households by improving water supply, reducing water losses, increasing water-use efficiency, promoting climate-resilient agricultural practices, and strengthening policy frameworks. Additionally, the project aims to contribute to greenhouse gas (GHG) emission reductions through the adoption of low-emission practices and green technologies. The Food and Agriculture Organization of the United Nations (FAO) will serve as the accredited entity (AE) and the Executing Entity (EE) through its Representation in Iraq for this project.

2. The SRVALI project is designed to address critical barriers to climate resilience in the agriculture sector, including lack of public investment, shortage of energy for efficient water use, high climate change adaptation deficit, and lack of supportive policies. The project's rationale is built on the need to improve water management, increase the adoption of climate-resilient agricultural practices, and strengthen institutional capacities to support sustainable development. By focusing on the most vulnerable regions and populations, the project aims to create a paradigm shift in how water and agricultural resources are managed in Iraq, ultimately enhancing food security and reducing poverty despite the negative impacts of climate change.

3. The project is also expected to make a relatively small but significant contribution to climate change mitigation – expecting to achieve a total reduction of 22,536 tonnes of CO_2 equivalent (t CO_2 eq) over its 20-year lifetime, with 6,761 t CO_2 eq reduced during the six-year implementation period. This includes only the anticipated GHG reductions from infrastructure investments under Component 1. Additional GHG emissions expected to be reduced or avoided as a result of the adoption of low-emission agricultural practices under Component 2 are considered as mitigation co-benefits. The project addresses primarily the GCF mitigation result area related to energy generation and access, focusing on the installation of solar photovoltaic systems on water canals to reduce emissions resulting from the use of fossil fuels.

4. Furthermore, the project aims to directly benefit 1,044,800 individuals and indirectly benefit 913,334 individuals, reaching a total of 1,958,134 people (approximately 4.5 per cent of the population of Iraq), with 50 per cent being women. The specific adaptation result areas

addressed include the resilience of the most vulnerable people and communities, health and well-being, and food and water security as well as infrastructure and built environment. By improving water management and promoting climate-resilient agriculture, the project aims to reduce the vulnerability of rural communities to climate change.

5. The project has three main and complementary components:

(a) **Component 1**: Strengthening resilience against climate-induced water scarcity. This component addresses the urgent need to improve water availability and efficiency in the face of increasing water scarcity due to climate change. Key outputs include the conversion of open-air canals to piped systems (the biggest single project investment, at USD 22.6 million), the rehabilitation of irrigation infrastructure, the installation of solar-powered systems, and capacity-building for water management. Activities will focus on reducing water losses, increasing water use efficiency, and ensuring a more reliable water supply for agricultural production;

(b) **Component 2**: Climate-resilient agriculture production. This component focuses on addressing the adaptation deficit by promoting climate-smart agricultural practices and technologies. Outputs include enhanced farmer capacities, adoption of climate-resilient crops, and the establishment of e-extension services. Activities will involve training programmes, knowledge transfer initiatives, and the empowerment of Water User Associations to adopt low-emission and climate-resilient practices; and

(c) **Component 3**: Scaling-up climate adaptation through policy formulation and planning. This component aims to create an enabling environment for sustainable water and agricultural management through policy reforms and strategic planning. Outputs include strengthened policy frameworks and enhanced institutional capacities for climate adaptation. Activities will involve the development of policies and strategies for water management, renewable energy adoption, and climate resilient agriculture at the national level.

6. The SRVALI project is of critical importance to Iraq, not only from a socioeconomic standpoint, such as enhancing food security and livelihoods in rural areas, but also from an environmental perspective.

7. The total project budget is USD 38.95 million, with USD 29.25 million requested from GCF as a grant. Co-financing amounts to USD 9.70 million, comprising both in-cash contributions from the Government of Iraq and FAO, as well as in-kind contributions, including technical assistance and capacity-building support.

8. The project will be executed by the Government of Iraq, through the Ministry of Water Resources and the Ministry of Environment, and FAO Iraq, which will oversee the implementation of GCF-funded activities. FAO's role as an executing entity (EE) ensures the project's alignment with national priorities and facilitates effective coordination among stakeholders.

9. The project's governance structure includes a project management unit that will oversee the implementation of activities, coordination among stakeholders and monitoring and evaluation. FAO, as the AE, will be responsible for ensuring compliance with GCF standards and policies. FAO Iraq, as one of the three EEs, will play a critical role in managing the day-to-day operations of the project, ensuring alignment with national strategies and effective delivery of project outputs.

1.2 Impact potential *Scale: Medium to high*

1.2.1. Adaptation impact potential

10. The project sets out to enhance climate resilience of vulnerable agriculture households in Karbala, Muthanna and Najaf governorates, targeting 1,044,800 direct beneficiaries and 913,334 indirect beneficiaries, which represents about 4.5 per cent of the population of Iraq. There is a focus on reaching women and vulnerable groups. However, considering the overall scale of climate vulnerability in Iraq, there may be challenges in extending these benefits more broadly across the country. The project's reach, while substantial, may be seen as a starting point rather than a complete solution to the extensive adaptation needs of Iraq.

11. The project is well-positioned to reduce vulnerability by enhancing adaptive capacity, especially among farming communities. The emphasis on building capacity through Water User Associations and introducing climate-resilient crops is appropriate given the context. However, the effectiveness of these interventions will likely depend on the sustained engagement and capacity of local institutions, which can be challenging in regions with complex sociopolitical dynamics.

12. Strengthening institutional and regulatory systems for climate-responsive planning is a positive and necessary component of the project. The proposed policy and governance reforms align well with broader climate adaptation needs in the country. That said, the long-term sustainability of these reforms may hinge on the political and institutional stability of the country, which can sometimes be unpredictable. The project's success in this area will require ongoing support and possibly adaptive management as conditions evolve.

13. The project's efforts to increase the generation and use of climate information in decision-making are well-conceived. By integrating information communication technology for climate change and enhancing data-driven agricultural planning, the project is taking steps to empower farmers and policymakers. Yet the effective dissemination and utilization of this information across all stakeholder groups may face hurdles, especially in areas with limited technological infrastructure or access to education.

14. The project's strategy to strengthen adaptive capacity and reduce exposure to climate risks is aligned with the country's urgent needs. By improving water management and agricultural practices, in a manner which reduces water losses from evaporation and leakage and increases efficiency of water use, the project aims to reduce the risk of crop failure and enhance food security. While these efforts are essential, the complexity of climate challenges in Iraq suggests that a more integrated approach across sectors could potentially enhance overall resilience.

15. Enhancing awareness of climate threats and risk-reduction processes among local communities is a critical aspect of the project. The focus on education and capacity-building is likely to yield positive outcomes, particularly in raising awareness among vulnerable populations. However, the success of these efforts may depend on overcoming cultural and social barriers, which requires a nuanced and context-sensitive approach.

1.2.2. Mitigation impact potential

16. The project is expected to reduce 22,536 t CO_2 eq over its 20-year lifetime, contributing to the mitigation efforts of Iraq. This reduction is achieved through a combination of two infrastructure improvements in Component 1: rehabilitation works on 68 kilometres of water canals resulting in a decreased need for pumping water; and installation of solar systems on water canals, providing electricity to run water pumps of the Department of Water Resources of the Ministry of Water Resources and substituting for fossil-fuel-based energy from the grid. The project also supports the elaboration of a road map for rural solar electrification. While the total reduction is a positive contribution, it represents a modest percentage of overall emissions in Iraq, highlighting the importance of viewing this project as part of a broader, long-term strategy

for low-emission development. In a perspective where every mitigation action counts, the GHG emission reductions resulting from the project's activities should be valued and encouraged.

17. The project also aspires to achieve mitigation co-benefits, at a much larger scale, through Component 2 interventions to shift to low-emission agricultural practices in barley, wheat and rice production. In response to a query from the iTAP, the AE explained that the Secretariat had recommended that these be considered mitigation co-benefits rather than key results.

18. The project's focus on avoiding the lock-in of high-emission infrastructure by promoting solar-powered irrigation systems is forward-looking. This shift towards renewable energy in agriculture complements emission reductions achieved by reduced evaporation losses, which stand to reduce the need for pumping water that is subsequently lost. However, the success of this initiative may depend on overcoming logistical and operational challenges, particularly in maintaining and scaling these systems in the context of a broader energy landscape for Iraq.

19. The installation of solar systems for irrigation contributes to low-emission energy capacity, although the scale of impact is modest. While the project sets an important precedent for renewable energy use in agriculture, its overall contribution to energy transition in Iraq may be limited by the scale and scope of the interventions. Greater emphasis on integrating these efforts with national energy strategies could enhance the long-term impact.

20. Using the EX-ACT tool, the project conducted an estimation of GHG emission reductions according to best practices, both for the mitigation results from Component 1, and for the mitigation co-benefits from Component 2. In relation to Component 2, the iTAP identified certain weaknesses related to assumptions about the linear progression of agricultural systems and the consideration of a constant value for soil organic carbon. These limitations, which could impact the estimation of GHG emission reduction co-benefits presented in the project proposal, were acknowledged by the AE, which has committed to addressing them in the monitoring and evaluation (M&E) system and making the necessary adjustments both in annual reporting and in future versions of the tool.

21. The SRVALI project is a valuable and necessary initiative for Iraq, addressing critical adaptation and mitigation needs. While there are some limitations related to scale, institutional capacity and the broader context, the project is well-positioned to make meaningful contributions to climate resilience and low-emission development pathways in Iraq.

22. Overall, the iTAP rates the climate impact potential of the proposed project as medium to high.

1.3 Paradigm shift potential *Scale: Medium to high*

23. The project introduces a potentially game-changing shift away from the traditional system of irrigation through open-air canals in Iraq, to closed piped systems, significantly reducing water loss by evaporation, which is increasing with climate change. In addition, the project introduces innovative solutions for modernizing the system of water regulation and use, including the introduction of metering systems, backed up by strengthened community-based water user associations. The project also promotes the adoption of solar-powered irrigation systems and climate-resilient agricultural practices, which are expected to create new market opportunities in the country's agricultural sector. By targeting the development and deployment of these technologies, the project opens avenues for new business models and market segments focused on low-emission and climate-resilient agriculture. However, the scalability of these innovations may require further support to ensure broader market penetration beyond the initial project sites.

24. The project documents indicate the development of a robust M&E system, as well as a learning and knowledge management system, which are essential for fostering broader adoption of successful practices. These mechanisms are designed to capture insights and experiences that can be disseminated to inform future projects. These systems should be implemented with the support of certain university partners in the country, among others, to contribute to the process of strengthening human capital on the issue. The emphasis on knowledge management and the potential for incorporating lessons into other initiatives is a strength, although the actual impact will depend on the effectiveness of the information dissemination and the willingness of other stakeholders to adopt these lessons.

25. The project has arrangements in place that could support the long-term and financially sustainable continuation of its key activities, beyond completion of the intervention. This includes the involvement of local institutions, capacity-building efforts, the creation of strategic partnerships and, most importantly, testing new ways of financially contributing to the sustainability and functioning of irrigation projects. The possible transition from 'flat' irrigation fees (based on hours of irrigation and not on how much water is received) towards volumetric measurement and possible charging by volume can be paradigm-shifting. It also stands to enhance equity within irrigation systems as some farmers may currently pay without receiving water during their turns.

26. However, the sustainability of these outcomes will likely depend on the continued commitment of local stakeholders and the availability of financial resources, which could be challenging in the current economic context of Iraq. Regarding financial resources beyond the implementation phase of the project, the iTAP believes that the exit strategy could be strengthened by diversifying funding sources, particularly by considering Islamic financing. On this subject, the entity, during the question-and-answer session, promised to explore this possibility.

27. The project aims to shift incentives in favour of low-carbon and climate-resilient development by addressing key barriers, such as the high costs and risks of adopting new technologies. By demonstrating the viability and benefits of these innovations, the project seeks to encourage broader adoption among market participants. The potential impact is significant, though it will require sustained efforts to ensure that the initial momentum translates into widespread change, notably for the domestic private sector. On this aspect, the project lacks clarity.

28. The project is well-positioned to advance national and local regulatory frameworks that promote investment in low-emission and climate-resilient development. The focus on policy reforms and the creation of enabling environments is critical for systemic change. However, the success of these efforts will depend on the stability of political and institutional frameworks, as well as the capacity of local governments to implement and enforce these regulations effectively.

29. The project's theory of change for replication is well-articulated, suggesting that the proposed activities could be effectively replicated in other sectors, institutions, or regions. This potential for replication could catalyse broader impacts beyond the immediate scope of the project, especially if successes are communicated effectively and adapted to other contexts. The challenge will be ensuring that the conditions for replication are adequately supported, both technically and financially.

30. The SRVALI project demonstrates good potential to catalyse broader impacts beyond its immediate scope, particularly through innovative volumetric measurements and tariff system, market creation and policy influence. The realization of this potential will depend on effectively addressing the challenges related to sustainability, market readiness and the broader risk environment in Iraq.

31. The iTAP considers the paradigm shift potential of the proposed project as medium to high.

1.4 Sustainable development potential *Scale: High*

32. The project offers a range of environmental, social and economic co-benefits that align with several United Nations Sustainable Development Goals (SDGs). These include SDG 1 (No Poverty), SDG 2 (Zero Hunger), SDG 5 (Gender Equality), SDG 13 (Climate Action), and SDG 15 (Life on Land). The project's integrated approach addresses multiple aspects of sustainable development, contributing to both immediate and long-term goals in the targeted regions.

33. In addition to the mitigation co-benefits discussed above, the project promotes positive environmental externalities, particularly through the enhancement of soil and water quality, conservation of water resources and protection of biodiversity. By implementing low-emission, climate-resilient agricultural practices and improving irrigation systems, the project helps reduce soil degradation, prevents over-extraction of water resources, and promotes the sustainable management of natural ecosystems. These interventions are crucial for maintaining the environmental health of the targeted regions, though their impact will depend on the consistent and widespread adoption of these practices.

34. The project has the potential to improve health and safety outcomes for both women and men by reducing vulnerability to climate-induced risks and promoting safer agricultural practices. The introduction of efficient water management and climate-resilient crops could reduce the risks associated with water scarcity and agricultural failures, thereby contributing to better health and food security outcomes. To the extent that metering and volumetric tariffs are implemented, there is good potential for enhancing transparency and equality in water use.

35. The project is expected to generate positive externalities in terms of job creation and poverty alleviation, particularly for rural communities, including both women and men. By enhancing agricultural productivity and introducing new technologies, the project will likely create new employment opportunities in the agriculture sector and related industries. Additionally, the project's focus on capacity-building and the involvement of local industries could contribute to long-term economic growth and resilience in the targeted regions.

36. The project places a strong emphasis on addressing gender inequalities and empowering women, particularly in terms of access to resources and decision-making roles. Through targeted capacity-building activities and improved access to financing, the project seeks to correct prevailing inequalities and ensure that women, who are often disproportionately affected by climate change, are actively involved in and benefit from the project's interventions.

37. The SRVALI project demonstrates strong potential to contribute to sustainable development in Iraq, with a focus on environmental conservation, economic growth and social inclusion.

38. The iTAP rates the sustainable development potential of the proposed project as high.

1.5 Needs of the recipient *Scale: High*

39. Iraq faces significant exposure to climate risks, including increased temperatures, erratic rainfall and water scarcity. The country's agricultural sector, particularly in the southern governorates of Karbala, Muthanna and Najaf, is highly vulnerable to these climate risks. The intensity of exposure, coupled with limited adaptive capacity, underscores the critical need for targeted interventions like the SRVALI project to build resilience in these regions.

40. A substantial portion of the country's population, particularly in rural areas, is dependent on agriculture (the sector's contribution to GDP is less than 6 per cent, but its contribution to employment is estimated at 18 per cent as indicated in the funding proposal) and thus highly vulnerable to the impacts of climate change. The project targets regions where a significant share of the population relies on climate-sensitive livelihoods, with agricultural productivity being a key economic asset at risk. The potential social and economic consequences of unmitigated climate risks in these areas are severe, reinforcing the urgency of the proposed interventions.

41. The targeted regions in Iraq are characterized by low levels of social and economic development, with high rates of poverty and limited access to basic services. Vulnerable populations, including women, are particularly at risk due to their limited capacity to adapt to climate shocks. The project's interventions are crucial in addressing the specific needs of these groups, thereby contributing to broader social and economic development goals.

42. Barriers such as a high level of public debt, limited fiscal space, and the lack of access to international financial markets hinder the ability of Iraq to finance large-scale climate resilience projects on its own. The project's reliance on GCF funding is therefore both justified and necessary to overcome these barriers and enable the proposed interventions.

43. The SRVALI project addresses critical vulnerabilities and financing needs in Iraq, particularly in regions with high exposure to climate risks and low adaptive capacity.

44. Consequently, the iTAP assesses the needs of the recipient for the proposed project as high.

1.6 Country ownership *Scale: Medium to high*

45. The SRVALI project is closely aligned with national priorities for low-emission and climate-resilient development, as outlined in key national documents such as the updated nationally determined contribution. The project's focus on improving water management, enhancing agricultural resilience and promoting renewable energy solutions directly supports national climate goals, demonstrating strong alignment with the strategic objectives and technology needs of Iraq.

46. The development of the SRVALI project involved extensive consultations with a wide range of stakeholders, including civil society groups, local communities and government agencies. Particular attention was given to ensuring that gender equality and social inclusion were integrated into the project's design. The proposal includes mechanisms for ongoing stakeholder engagement, which are critical for maintaining transparency, accountability and local ownership throughout the project's implementation. To strengthen the stakeholder engagement mechanism and ensure, in particular, the bottom-up approach that characterizes the project, it would be important to revisit the criteria for selecting traditional practices and techniques to be considered in the farmer field schools. This would help avoid the risk of ignoring practices and techniques that hold strong cultural value for the farmers.

47. The project's alignment with broader development and climate strategies in Iraq has been reinforced by the involvement of key national institutions, such as the Ministry of Water Resources and the Ministry of Environment. These institutions play a central role in the project's implementation, ensuring that it is fully integrated with national efforts to address climate change and sustainable development. Their involvement also enhances the project's legitimacy and alignment with the country's long-term goals.

48. FAO, as both the AE and EE, brings a wealth of relevant experience and expertise to the project. FAO, as per the information provided in the Funding Proposal, has a long history of working in Iraq and has successfully implemented similar projects focused on agriculture, water

management and climate resilience. This track record provides confidence in FAO's ability to manage and execute the SRVALI project effectively, leveraging its deep understanding of the local context and challenges.

49. The SRVALI project demonstrates strong country ownership, with clear alignment to national climate strategies, robust support from local institutions and a well-established track record of the EEs. The extensive stakeholder consultation process and the focus on using existing national systems further reinforce the project's potential to be successfully implemented and sustained within the national context of Iraq.

50. The overall iTAP assessment of country ownership for the proposed project is medium to high.

1.7 Efficiency and effectiveness *Scale: Medium to high*

51. The financial structure of the project demonstrates an appropriate level of concessionality, designed to make the project viable without distorting market conditions. The use of grant funding is justified given economic constraints in Iraq and the public good nature of the project's outcomes, particularly in terms of enhancing climate resilience for vulnerable small-scale farming communities.

52. The project is structured in a way that minimizes the risk of crowding out private and other public investments. By focusing on areas where private sector involvement is limited due to high risk or low immediate returns, GCF support plays a catalytic role rather than displacing other sources of funding. This approach ensures that the project complements, rather than competes with, existing and potential future investments in agricultural and water sectors in Iraq.

53. The co-finance of USD 9.7 million demonstrates some commitment from the Government of Iraq and other partners, like FAO. The co-financing is crucial for ensuring sustainability of the project's outcomes and reflects strong local ownership. The co-finance commitment also indicates effective leveraging of GCF resources to maximize impact, though the overall level of co-financing is somewhat constrained by the country's economic conditions.

54. The project incorporates best practices and lessons learned from similar initiatives, both globally and within the region, to ensure maximum efficiency and effectiveness. The conversion of open-air canals to piped systems, adoption of solar-powered irrigation systems, climate-resilient crops, and community-based water management practices reflect the application of well-established technologies and methodologies that are tailored to the specific needs of Iraq. This strategic approach helps to optimize resource use and enhance the overall impact.

55. The project's emphasis on innovation, particularly in the reduction of evaporation losses through covered canals and potential use of volumetric metering and charging for irrigation water, as well as the use of renewable energy, climate-resilient agricultural practices, and the establishment of a group of climate wise women as agents of change, aligns with industry best practices and supports the project's goals of efficiency and effectiveness. The introduction of these innovations in a challenging context like Iraq requires careful planning and execution, but the potential benefits are substantial, particularly in terms of improving resource efficiency and reducing vulnerability to climate change.

56. The overall economic and financial rate of return for the project (estimated at 16 per cent) when considering GCF support, indicates a positive outcome that justifies the investment. The project's design ensures that the resources are used effectively to generate both immediate and long-term benefits, making a strong case for the efficiency and effectiveness of the proposed interventions.

57. The SRVALI project is designed with a sound financial structure and incorporates best practices to ensure efficient and effective use of resources. The co-financing commitment and potential for catalysing further investments are strengths, although the economic constraints in Iraq present some challenges. Overall, the project is well-positioned to deliver significant and sustainable impacts with GCF support.

58. Consequently, the iTAP considers the efficiency and effectiveness of the proposed project is medium to high.

II. Overall remarks from the independent Technical Advisory Panel

59. The proposed project has a comprehensive and strategic approach to enhancing climate resilience and promoting low-emission agricultural practices and technologies in the most vulnerable regions of Iraq. Furthermore, the project demonstrates strong alignment with national priorities. With high potential for sustainable development, the SRVALI project is well positioned to significantly improve water management, agricultural resilience and policy frameworks, thereby benefiting nearly 2 million individuals, including a substantial proportion of women.

60. However, the iTAP suggests that the AE considers the following aspects:

(a) Seek strong involvement from academic stakeholders in the country to integrate into both the M&E and the learning and knowledge-sharing systems, indicators that can help address the gaps in the EX-ACT tool;

(b) Develop, after the mid-term evaluation, a sustainability plan for the project that would include scenarios for diversifying funding sources for the activities initiated by the project, and avenues for greater involvement of the domestic private sector; and

(c) During the first year of the project, revise the stakeholder engagement plan to take into account the cultural preferences of farmers among the criteria for selection of techniques and practices to be considered in the farmer field schools.

61. Based on the analyses presented in the above paragraphs, the iTAP recommends that the Board approve this funding proposal.

Response from the accredited entity to the independent Technical Advisory Panel's assessment (FP249)

Proposal name:	Strengthening climate Resilience of Vulnerable Agriculture Livelihoods in Iraq (SRVALI)
Accredited entity:	Food and Agriculture Organization of the United Nations
Country:	Republic of Iraq
Project/programme size:	Small

Impact potential
The AE acknowledges that the overall impact potential is assessed as **medium to high** by ITAP.
Paradigm shift potential
The AE acknowledges that the overall paradigm shift potential is assessed as **medium to high** by ITAP.
Sustainable development potential
The AE acknowledges that the overall sustainable development potential is assessed as **high** by ITAP.
Needs of the recipient
The AE acknowledges that the overall needs of the recipient is assessed as **high** by ITAP.
Country ownership
The AE acknowledges that the overall country ownership is assessed as **medium to high** by ITAP.
Efficiency and effectiveness
The AE acknowledges that the overall efficiency and effectiveness is assessed as **medium to high** by ITAP.
Overall remarks from the independent Technical Advisory Panel:
The AE acknowledges iTAP overall assessment and recommendation for the Board approval.

The AE would like to confirm that the project already foresses to involve key academic stakeholders in the country to further improve the project indicators; In full alignment with Farmer Field Schools (FFS) principles [*(a)Farmers' needs and interest define and drive FFS; b) Farmers' local knowledge, alongside science-based knowledge, co-produces and co-creates new knowledge, science and public services.; c) Local and outside knowledge are integrated through observation, critical analysis, sharing and debate amd d) FFS content is adapted to local context],* the cultural preferences of farmers are already included as criteria for selection of techniques and practices in the SRVALI FFS.

The AE further confirms that in the specific context of SRVALI Funding Proposal, the above principles The AE will develop, after the mid-term evaluation, a sustainability plan for the project that would include scenarii for diversifying funding sources for the activities initiated by the project, and avenues for greater involvement of the domestic private sector.

Annex 8
Gender Assessment and Project Level Action Plan

LIST OF ABBREVIATIONS

CCGAP	Climate Change Gender Action Plan
CEDAW	Convention on the Elimination of all Forms of Discrimination Against Women
CFSVA	Comprehensive Food Security and Vulnerability Analysis
CSO	Central Statistical Organization, Ministry of Planning, Government of Iraq
CWW	Climate Wise Women
DoA	Directorate of Agriculture
DoWR	Directorate of Water Resources
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus Group Discussion
GBV	Gender-Based Violence
GCF	Green Climate Fund
GDI	Gender Development Index
GEF	Green Environment Facility
GII	Gender Inequality Index
HDI	Human Development Index
IDP	Internally Displaced Person
IFAD	International Fund for Agricultural Development
IOM	International Organization for Migration
JICA	Japan International Cooperation Agency
KEI	Key expert interviews
MENA	Middle East and North Africa
MICS	Multiple Indicator Cluster Survey
MOE	Ministry of Environment
MoA	Ministry of Agriculture
MoWR.	Ministry of Water Resources
NAP	National Adaptation Plan
NESAP	National Environmental Strategy and Action Plan for Iraq
NGOs	Non-Governmental Organizations
ODI	Overseas Development Institute
OFWM	On-farm water management
PHM	Post-harvest management
PIDP	Participatory Irrigation Development Plan
SRVALI	Strengthening Climate Resilience of Vulnerable Agriculture Livelihoods in Iraq's rural communities
UN Women	United Nations Entity for Gender Equality and the Empowerment of Women
UNDAF	United Nations Development Assistance Framework

UNDG	United Nations Development Group
UNEP	United Nations Environment Programme
UNSCR	United Nations Security Council Resolution
WFP	United Nations World Food Programme
WHO	World Health Organization
WMT	Water Users Management Team
YDI	Youth Development Index

Gender Assessment

Introduction

1. The objective of the gender assessment is to facilitate and inform gender mainstreaming in the Full Funding Proposal to the Green Climate Fund (GCF) for the project titled "**Strengthening Climate Resilience of Vulnerable Agriculture Livelihoods in Iraq's rural communities (SRVALI**)". The assessment aims to provide an overview of the gender situation and dynamics in Iraq, with a particular focus on the role of women in agriculture, the impact of climate change on women and their role in adapting to it. It seeks to identify key gender issues in climate change adaptation and strategies for increasing women's agency in development interventions for climate resilience through a review of relevant national policies, plans, research studies, donor initiatives, and stakeholder consultations. The scope of the assessment has been limited by the paucity of data and studies on women in agriculture and the impact of climate change on women in Iraq. The findings of the assessment have been used to make the project gender sensitive as well as identify specific opportunities to enhance women's agency to deal with climate risks. Part I of the report provides an overview of the gender situation in Iraq and Part II provides the Gender Action Plan for the project.

Key Expert Interviews & Consultations

2. A number of key interviews were conducted with experts (KEIs) to understand the gender dimensions of the impact of climate change on agriculture, initiatives to address gender issues and lessons learnt. The meetings were conducted with experts from the following agencies: World Food Programme (WFP), United Nations Environment Programme (UNEP), UN Women, International Organization for Migration (IOM), United nations Development Programme (UNDP), Japan International Cooperation Agency (JICA), non-governmental organizations (NGOs) working with women in the target governorates. Men and women from ministries at the federal level, namely Ministry of Planning, Ministry of Finance, the Ministry of Water Resources, Ministry of Agriculture (MoA), Ministry of Environment and Directorate of Water Resources and Directorate of Agriculture from Muthanna, Najaf and Kerbala were also consulted. The findings from these interviews have informed the Gender Assessment and the Gender Action Plan (GAP).

3. Further detailed consultations were also carried out from August 2022 to March 2023 with the co-financiers of the project, the Swedish International Development Cooperation Agency (SIDA) and Global Affairs Canada (GAC). SRVALI is in line with the Gender strategy[1] of the two donors and the consultation led to the financing and the start-up of the initiatives "Enhance climate resilience of vulnerable agricultural households in Southern Iraq through the promotion of climate smart water management and good agriculture practices" (SIDA initiative - USD 10.2 mln total budget) and "Adapting rural households in Southern Iraq to water scarcity induced by climate change by empowering women as agents for transformation and addressing the food-energy-water nexus" (GAC initiative - USD 7.3 mln total budget). The two projects are co-financing the SRVALI with USD 4.4 mln and USD 1.7 mln respectively (see Annex 13).

[1] Strong synergies and complementarities exist in particular with both GAC's "Gender Equality Policy" and the "Canada Feminist International Policy" and with SIDA's policy "Promoting Gender Equality"

Community Consultations

4. Community consultations[2] were held in the governorates of Kerbala, Najaf, and Muthanna, to ensure that the project design was responsive and relevant to the needs of women and men farmers in the target areas. The purpose of the consultations was to gain insights into the needs, challenges and priorities of women and men farmers in adapting to climate change. The consultations explored women and men's roles in agriculture, perceptions of climate change and its impact on agriculture and livelihoods, access to resources and extension services, and participation in decision-making. Feedback on the concept of Climate Wise Women (CWW) and key areas where women and men farmers require training or support was also obtained.

   The methods of engagement included focus group discussions (FGDs), in-depth interviews (IDIs), and key informant interviews (KIIs), disaggregated by gender. In total, nine FGDs were held with women farmers (three in each governorate), three FGDs with men farmers (one in each governorate), nine IDIs with women-headed households (three in each governorate), nine KIIs with women, and three KIIs with men (see Table 1: Community Consultations Distribution of FGDs, KII and IDIs). A total of 72 women and 25 men were reached through these consultations. The final report, which documents detailed findings from the consultations, is attached as Annex 8A.

Table 1: Community Consultations Distribution of FGDs, KIIs, and IDIs

Governorate	Focus Group Discussions (FGDs) with Women Farmers	Focus Group Discussions (FGDs) with men Farmers	In-depth Interviews (IDI) Women-Headed Households	Key Informant Interviews (KII) Women	Key Informant Interviews (KII) men
Kerbala					
	1	1	1	1	1
	1		1	1	
	1		1	1	
Najaf					
	1	1	1	1	1
	1		1	1	
	1		1	1	
Muthanna					
	1	1	1	1	1
	1		1	1	
	1		1	1	
Total	9	3	9	9	3

Demographic Profile

5. Iraq's population is estimated to be around 39,127,889 million, of which 50.5 percent is male and 49.5 percent is female.[3] Women comprise nearly half of the total population and head one in ten Iraqi households; 80 percent of these are widows.[4] Some 70

[2] A consulting firm, Stars Orbit Consultations and Management, was contracted to conduct the community consultations.
[3] Directorate of Population and Labour Statistics, Government of Iraq, 2019.
[4] UNDP Iraq, *Gender in Focus*; www.iq.undp.org/content/dam/iraq/docs/Gender_final.pdf.

percent of Iraqis live in urban areas.[5] Iraq is one of the most youthful countries in the world; 38 percent of the population is under the age of 15 years; 58 percent is between 15 and 64 years old, and 3 percent is above 65.[6] The average household size in Iraq is 6.0.[7]

Table 2: Population of Iraq Disaggregated by Sex and Age

	Total Population	Total Women	Total Men	Share of Female (%)	Avg. HH Size[8]
National	39,127,889	19,359,565	19,768,324	49.5	6.0

Source: Directorate of Population and Labour Statistics, Government of Iraq, 2019 / Data on Average HH Size is taken from Comprehensive Food Security and Vulnerability Analysis (CFSVA) 2016.

6. Iraq's population is composed of several ethnic and religious minorities, including Christians, Kurds, Turkmens, Assyrians and Yazidis. According to Minority Groups International, there are various demographic groups in Iraq of which the largest three are Shi'a Arabs, Sunni Arabs and Kurds, who are mainly following Sunni Islam. It is estimated that 99 percent of Iraqis are Muslim, divided among Shi'a and Sunni, and the remaining 1 percent is composed of various other religious groups including Christians, Yezidis, Kaka'i and Sbean-Mandaeans. Around 12.3 percent households are polygamous where women are living with a co-wife of their husbands.[9] An estimated 0.6 million are people with disabilities.[10]

7. In 2020, Iraq was labeled as "very high risk" of a humanitarian crisis by INFORM's Global Risk Index. The most vulnerable people in Iraq and those in acute need of humanitarian assistance are those directly affected by the 2014-2017 conflict against Islamic State of Iraq and the Levant (ISIL), which displaced nearly six million people. Humanitarian partners estimate that 4.1 million (27 percent women, 46 percent children, and 15 percent people with disabilities) people require some form of humanitarian assistance in Iraq, such as shelter, healthcare, potable water, improved sanitation, education, and livelihoods opportunities. Of the people in acute need (1.77 million), 50 percent are concentrated in only two governorates – Ninewa and Al-Anbar, and of these, more than 816,000 are children. Approximately 1.5 million people remain internally displaced, 70 percent of whom have been displaced for more than three years. Approximately 370,000 internally displaced persons (IDPs) in formal camps, 537,000 IDPs in out-of-camp locations and 1,750,000 returnees face critical problems related to resilience and recovery. About 27 percent of IDPs are unemployed, and within that group, the most vulnerable are women and children, 49 percent of whom are less than 18 years old.[11]

Poverty

8. Overall, 20 percent of Iraqis were living under the poverty line before the onset of COVID-19 in 2020. While, the historically poorer South still had the highest poverty

[5] Directorate of Population and Labour Statistics, Government of Iraq, 2019.
[6] World Bank modeled estimated data; https://data.worldbank.org/indicator/SP.POP.0014.TO.ZS?locations=IQ.
[7] World Food Programme (WFP), FAO, Central Statistical Organization (CSO), Government of Iraq, *Comprehensive Food Security and Vulnerability Analysis* (CFSVA), 2016.
[8] WFP, FAO, CSO, Government of Iraq, CFSVA, 2016.
[9] Finnish Immigration Service, *Overview of the Status of Women Living Without a Safety Net in Iraq*, 2018; https://migri.fi/documents/5202425/5914056/Report_Women_Iraq_Migri_CIS.pdf/ab7712ba-bad7-4a1f-8c1f-f3f4013428a7/Report_Women_Iraq_Migri_CIS.pdf.
[10] United Nations Office for the Coordination of Humanitarian Affairs (OCHA), *Humanitarian Needs Overview Iraq, 2020*; https://reliefweb.int/sites/reliefweb.int/files/resources/iraq_hno_2020.pdf
[11] Ibid.

rate (31.1 percent), the 2014 twin crises resulted in a poverty rate in North (30.2 percent) that is as high as of the South. Additionally, Iraqi children under 15 years old (22.8 percent) faced significantly greater incidences of poverty compared to non-elderly and elderly adults (15.0 percent and 12.5 percent respectively). The poverty rate for children under 18 years is 22.1 percent.[12]

9. As a result of COVID-19 pandemic and associated socio-economic impacts, 4.5 million (11.7 percent) Iraqis have been pushed below the poverty line. Significant job losses and rising prices have driven the national poverty rate to climb to 31.7 percent from 20 percent in 2018. With an additional 15.8 percent falling into poverty, children are the most impacted age group by the crisis. While 1 out of 5 children were poor before the crisis, the ratio has almost doubled to 2 out 5 children (37.9 percent) as the crisis unfolds. About 42 percent of the population is vulnerable, facing a higher risk as they are deprived in more than one dimension: education, health, living conditions, and financial security. Disruption to public services and the adoption of negative coping strategies by poor households are set to increase deprivation in wellbeing and inequality, especially among children.[13]

Human Development Index and Gender Inequality Index

10. Iraq ranked 123[14] out of 189 countries on the UN Human Development Index in 2020, 154[15] out of 156 on the Global Gender Gap Index, and 146[16] (out of 189) on the Global Inequality Index (GII), which measures gender inequalities in three important aspects of human development—*reproductive health* (maternal mortality ratio and adolescent birth rates); *empowerment* (parliamentary seats occupied by women and proportion of adult women and men aged 25 years and older with at least some secondary education); and *economic status* (labor market participation and measured by labor force participation rate of female and male populations). Iraq holds the lowest GII ranking (146) in comparison to other countries in the region, such as Saudi Arabia (56), Oman (68), Lebanon (96), Algeria (103) and Iran (113). However, it is still better positioned than Syria (122), Afghanistan (157) and Yemen (162).

Education

11. In Iraq, the national literacy rate is nearly 82 percent and the illiteracy rate (six years and older) is nearly 18 percent.[17] Nearly 70 percent women (15-49 years old) are literate, of which 74.3 percent reside in urban areas and 56.4 percent in rural areas, and 78 percent youth (15-24 years old) are literate (83 percent urban, 68 percent rural).[18]

12. The MICS 2018 findings show disparities in enrollment and completion rates by gender, area, and wealth. According to the latest Iraq Multiple Indicator Cluster Survey (MICS) 2018, the enrollment rate of boys exceeds the enrollment rate of girls in the primary stage and in the later stages, except in secondary education, where the enrollment rate for girls (35 percent) is higher than the enrollment rate for boys (31

[12] UNICEF and World Bank, *Assessment of COVID-19 Impact on Poverty and Vulnerability in Iraq*, July 2020
[13] Ibid.
[14] UNDP, *Human Development Report*, 2020; http://hdr.undp.org/sites/default/files/hdr2020.pdf.
[15] World Economic Forum, *Global Gender Gap Report*, 2021; http://www3.weforum.org/docs/WEF_GGGR_2021.pdf.
[16] Global Inequality Index (2020); http://hdr.undp.org/sites/default/files/2020_statistical_annex_table_5.xlsx.
[17] World Food Programme (WFP), FAO, Central Statistical Organization (CSO), Government of Iraq, *Comprehensive Food Security and Vulnerability Analysis* (CFSVA), 2016.
[18] CSO, Government of Iraq and UNICEF, *Iraq Multiple Indicator Cluster Survey* (MICS), 2018.

percent) in secondary education.[19] Similarly, considering completion by area, 79 percent of urban children (of appropriate age) complete primary school and 69 percent complete it in rural areas. With respect to wealth, while 94 percent of youth (15-24 years old) in the richest wealth quintile completed primary school, nearly half, 53 percent, of youth in the poorest wealth quintile attained the same.

13. There are two million out of school children in the country, half of which should be attending primary education. Moreover, results indicate that 68 percent girls and boys whose age is one year younger than primary education age are not attending early childhood or primary education programmes. This percentage drastically decreases with children of lower secondary school age who are not attending primary or secondary programmes; boys (28 percent) and girls (15 percent).

Health

14. The maternal mortality ratio in Iraq is 79 deaths per 100,000 live births.[20] The MICS findings indicate that the coverage of pregnant women is relatively high in Iraq, where 87.5 percent aged 15-49 years have at least one ante-natal (ANC) visit and 67.9 percent of pregnant women received health care through at least four visits to any health facility. There has been a marked improvement in trends in under-five mortality rates. While in 1995, the rate was 45.8 deaths per 1,000 live births, in 2018, the ratio was 26 deaths per 1,000 live births. A mother's education has a significant impact on reducing the mortality rate of children under the age of five with as 24 deaths per thousand live births of children were of mothers with secondary education and above, compared to 27 deaths thousand live births of mothers with primary education or none.[21]

Women's Economic Participation

15. Women make essential contributions to the local economy in general and rural economy in particular, yet their access to productive resources and employment opportunities remains limited, holding back their capacity to improve their lives and to better contribute to the economic growth, food security and sustainable development of their communities and countries.[22] Women in Iraq are not accessing the labour market on an equal basis with men. The public sector is the predominant employer in Iraq, and unemployment remains high, especially among women and youth. According to the 2018 data, only 18.1 percent of women over 15 years are economically active compared to 74.1 percent of men.[23] Moreover, women are excluded from the industry sector represented only by 3.9 percent (mostly related to the oil sector) compared to men (23.4 percent), whereas they are fairly more active in the agriculture sector (mostly informally and with poor social protection), accounting 43.9 percent of labour compared to 12.3 percent men.[24] In 2011, the percentage of women in agricultural employment was 49 percent, while men represented 17.1 percent. In 2017, 43.7

[19] CSO and Kurdistan Statistical Office, Government of Iraq & UNICEF, Iraq Multiple Indicator Cluster Survey (MICS), 2018. The number of households surveyed in Iraq was 20,521.
[20] UN Women data, https://data.unwomen.org/country/iraq.
[21] MICS, 2018
[22] Ibid.
[23] UNDP, Gender Inequality Index, 2018; http://hdr.undp.org/en/composite/GII
[24] Word Bank, Gender Data Portal, 2017

percent of women and 16.1 percent of men were working in the agricultural sector (see Figure 1).

16. The unemployment rate for young women is double than that of men. In 2017, about 56 percent of young women were unemployed compared to 29 percent for young men.[25] Women's participation in the formal labour sector is very low, in particular in the private sector, where only two percent of the total number of employees are women, most of whom are employed in low-paid and low-skilled jobs. There is a lack of information about women working in the informal labour sector, as well as in agricultural and domestic work.

Figure 1: Labor force participation in Iraq (percentage of female and male employment per sector)

	Female (Percentage of Total Female Employment)		Male (Percentage of Total Male Employment)	
	2011	2017	2011	2017
Employment in Agriculture	49	43.7	17.2	16.1
Employment in Industry	3.5	3.9	21.3	24.2
Employment in Services	47.5	52.3	61.5	59.7

Source: World Bank (2018). Data Bank based on ILO Modeled Estimates.

17. Women in Iraq carry much of the burden of unpaid household work. Most care work, such as cleaning, cooking, and caring for children or elderly, is performed by women and girls and is usually not remunerated. Although this work is critical to the proper functioning of communities, unpaid care work has been largely ignored by economic and social public policy initiatives. The Iraq Household Socio-Economy Survey (2012) reported that women spend on average more than six hours a day performing unpaid activities, such as cooking and childcare. According to the Overseas Development Institute (ODI), women in Iraq give up roughly 10.5 weeks more than men, per year, in unpaid and unrecognized work.[26] A 2017 study by Oxfam and UN Women reported that unpaid care work has increased in contexts of displacement (respondents estimated an increase from one to three hours to "most of the day"), with women continuing to consistently invest most of the time and energy (men spent only 25 percent of the total time allocated for unpaid care). The research reflected that women in conflict-affected areas regard care work as their fundamental responsibility and part of their identity.[27] Mothers, older (unmarried) daughters, and elderly women are the ones that mostly engage in unpaid care work.[28]

18. Among reasons cited by women for not seeking employment are domestic responsibilities, insufficient education, competing demands on time, cultural expectations, a perceived lack of qualifications, lack of access to safe transportation, opposition from family members, and health issues.[29] In addition, if through

[25] World Bank Group, *Iraq Economic Monitor from War to Reconstruction and Economic Recovery*, Spring 2018.
[26] Overseas Development Institute (ODI), *Women's Work: Mothers, Children and the Global Childcare Crisis*, March 2016; https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/10333.pdf.
[27] Luisa Dietrich & Simone E. Carter, *Gender and Conflict Analysis in Isis Affected Communities of Iraq*, 2017. Study produced by Oxfam with the support of UN Women in Iraq and the financial contribution of the Japanese Cooperation.
[28] UN Women & Oxfam, *Gender Profile – Iraq: A Situation Analysis on Gender Equality and Women's Empowerment in Iraq*, 13 December 2018.
[29] Reach, *Iraq Final Report Assessment on Employment and Working Conditions of Conflict-Affected Women Across Key Sectors*, 2019.

employment, a woman can keep and use her income as she sees fit, this may also be perceived as undermining the man's traditional authority in the home.[30]

Socio-Economic Profile of Rural Women in Iraq

19. Rural women constitute about a third of Iraq's women population. More than half of the women aged 12 years and above are married (56.5 percent), 35.2 percent are single, 0.5 percent are divorced, 0.3 percent are separated, and 7.4 percent are widows. The percentage of women-headed households at the national level is 9.9 percent, 10.3 percent in urban and 8.6 percent in rural areas.[31] According to MICS 2018, 55.2 percent women (15-49 years old) in rural areas own a mobile phone (72.4 percent in urban).The rise in female-headed households, from 7.7 percent in 2010[32] to nearly one in ten households now, is a result of the increasing death rates among men due to deteriorating security situation and the escalation of violence in the country, immigration, and the change in the pattern of social and economic relations with the loss of the family's breadwinner.

20. Women in rural areas are likely to be more economically active than women in urban areas but they also face greater food insecurity, barriers to education, and participate more in the informal—and therefore unprotected by Iraq's equal opportunity laws—economic sphere. Uneducated women in rural areas have a much higher incidence of poverty and are less likely to be involved in skilled labor than women in urban areas. Logistical and security issues contribute to rural women's inability to access education and, in turn, non-agricultural related jobs, as well as other critical services.[33] Discriminatory social norms often prevent women from inheriting or acquiring land and limit their access to services (be it health, social, financial or agricultural support services). Stereotypes about women's role, coupled with security issues and mobility constraints also undermine their participation in decision-making processes and their involvement in development programmes and social services, and participating in decision-making processes at the community level.[34]

21. Rural women shoulder a disproportionate number of roles and responsibilities, which include family and economic activities (household chores, agricultural labor, and livestock rearing) and suffer from gender-based discrimination in accessing social services, making them more vulnerable to the effects of poverty. They have limited access or control over resources, education, formal employment opportunities, and are gravely underpaid. Illiteracy and child marriage are prevalent among rural women. In nearly all indicators, rural women are worse off or disadvantaged, whether it is access to education, fertility, drinking water, and sanitation (see Table 3: Social Status of Iraqi Women Disaggregated by Urban and Rural) [35]. National efforts to target and include rural women in development programs have been weak. Funding for women-led small-scale businesses or projects, which could generate both income or employment in the

[30] ODI, *Women's Work: Mothers, Children and the Global Childcare Crisis*, March 2016.
[31] Poverty Monitoring and Evaluation Survey in Iraq for the year 2017/2018
[32] CSO, Iraq the results of Buildings, Dwellings and Establishment Census and Households Listing within the Project of Population and Housing Census (PHC), 2010.
[33] UNDP, *Integrating Women into the Iraqi Economy*, 2012; http://www.iq.undp.org/content/dam/iraq/IQ percent20Women percent20EE percent20- percent20Final.pdf
[34] United Nations Country Team (Iraq), *Report to the Convention on the Elimination of all forms of Discrimination Against Women Committee (Confidential*), 2019.
[35] CSO, Ministry of Planning, Government of Iraq, *The Reality of Rural Women in Iraq*, 2019.

area, is scarce. Moreover, those working in the private sector do not have the same social security as men do.[36]

22. The prevailing culture, customs, traditions, and national laws do not advance women's empowerment, agency, mobility, and equal rights. For example, while women have the right to inherit property and can bequeath their personal property to their children under Iraq's Personal Status Law, actual inheritance is regulated by a strict quota system that is in accordance with the Shari'a due to Resolution Number 137. The resolution gives conservative clerics total power over matters of marriage, divorce, inheritance, and child custody, eroding the rights previously guaranteed to women under the national law that applied equally to all citizens.[37]

Table 3: Social Status of Iraqi Women Disaggregated by Urban and Rural

	Urban	Rural	Total
Women aged 15-49 who got married before 15 years (%)	5.4	6.3	5.7
Women aged 15-49 who got married before 18 years (%)	24.0	26.8	24.8
Fertility (women aged 15-19 years)	68 / 1,000 women	75 / 1,000 women	70 / 1,000 women
Total Fertility (women aged 15-49)	3.6	3.8	3.6
Women (15-49 years) currently married and use any means of family planning (%)	54.1	49.7	52.8
Women (15-49 years) who gave live birth and received assistance during childbirth by a skilled attendant (%)	96.8	92.9	95.6
Women (15-49 years) who underwent any form of female circumcision (%)	7.0	8.3	7.4
Illiterate women aged 10 years and above (%)	14.7	27.3	-
Literate women (aged 10 years and above) (%)	19.4	29.8	-
Net enrollment rate in primary education (%)	92.2	86.7	91.6
Net enrollment rate in secondary education (%)	65.2	42.4	57.5
Net enrollment rate in preparatory education (%)	41.2	26.2	34
Households that use improved sources of drinking water (through pipes) (%)	55.9	41.9	-
Households served by public network for sanitation (%)	38.9	2.8	
Households who use cesspit (%)	56.2	70.2	

Source: MICS, 2018 / Poverty Monitoring and Evaluation Survey (2017/2018) for data on illiteracy and literacy rates.

23. According to MICS 2018, around 46.5 percent women aged 15-49 years in the countryside believe that a husband is justified to beat his wife if she reveals the secrets of the house, 38.9 percent believe beating justified if a wife argues with her husband, and 39.6 percent rural women believe a husband has a right to hit her wife if she leaves the house without telling him. In comparison, the percentages for the same

[36] CSO, Ministry of Planning, Government of Iraq, *The Reality of Rural Women in Iraq*, 2019.
[37] Freedom House, *Women's Rights in the Middle East and North Africa - Iraq*, 14 October 2005, available at: https://www.refworld.org/docid/47387b6b16.html [accessed 15 October 2021]

scenarios are much lower in urban areas, 28.4 percent, 22.9 percent, and 23.9 percent respectively.[38] Women's contribution to economic activity and the labor force is low compared to men due to many intertwined economic, educational, social, religious, and cultural reasons. The data of the Poverty Monitoring and Evaluation Survey in Iraq (2017/2018) reports that the rate of economic activity at the national level reached 42.8 percent and women's participation was quite small compared to men. The rate of unemployment among rural women (24.5 percent) is higher than the national rate (13.8 percent), it is lower than the rate for urban women (32.3 percent).[39]

24. Agriculture is an important sector for women's employment in rural areas; 23 percent of women working in Iraq are employed in the sector. Women participate in all stages of farming, including cultivation, planting, weeding, harvesting and marketing with some variations, depending on the crop and the region. However, women in agriculture are rarely in control of the resources and the financial transactions in agriculture—setting the price, going to the market to buy and sell, managing the financial aspects of the business, access to, and ownership of, land, agricultural technology, information, training, financial services and all related productive resources. Findings from the community consultations[40] in target governorates are consistent with these findings from secondary sources. Community consultations in the target Governorates show that the majority of women farmers do not own or rent land, have a limited role in decision-making related to crops, and limited access to markets. Some of the major challenges faced by women farmers, particularly women-headed households, are water scarcity, traditional farming methods, and lack of modern agricultural tools. Water shortage and primitive irrigation methods, like collecting water from a nearby lake, and lack of modern equipment (plowing by hand), takes a great physical toll on women farmers. Women-headed households face a double burden as they must also manage all the domestic responsibilities along with farming activities. [41] This gender gap makes agriculture less productive than it could be and undermines the country's ability to reduce hunger and poverty, and to support economic development.[42]

25. According to the Ministry of Planning, Government of Iraq, the following national efforts have been made to empower rural women so far: formation of a higher committee to advance the situation of rural women; provision of loans to rural women through the Agricultural Initiative Fund; Iraq's adoption of the project to advance the status of rural women in 2012; focus on rural women within the Poverty Alleviation Strategy. In addition, from 2005 onwards, the Ministry of Agriculture, Department of Agricultural Guidance and Training, Department of Rural Women and Girl Development, has implemented a number of extension activities and seminars in the governorates of Iraq aimed at developing the knowledge and skills of rural women and encouraging them to adopt scientific methods in agricultural work, which contributes to increasing production and improving its quality. Extension activities included orientation seminars, developmental qualification programs, small productive projects, field days, guidance pamphlets, and agricultural training courses.[43]

Political Participation

[38] CSO, Ministry of Planning, Government of Iraq, *The Reality of Rural Women in Iraq*, 2019.
[39] CSO, Ministry of Planning, Government of Iraq, *The Reality of Rural Women in Iraq*, 2019.
[40] See Annex 8A – Report on Community Consultations
[41] See Annex 8A – Report on Community Consultations
[42] UN Women & Oxfam. *Gender Profile – Iraq: A Situation Analysis on Gender Equality and Women's Empowerment in Iraq*, 13 December 2018.
[43] CSO, Ministry of Planning, Government of Iraq, *The Reality of Rural Women in Iraq*, 2019.

26. Women are under-represented in political decision-making at national and local levels, and within independent and reconciliations committees. The 2005 Constitution provides for a quota of 25 percent representation of women in the national Parliament. Despite the adoption of the Political Parties Law No 36 of 2015, which stipulates women's representation in the national assembly, their participation and/or representation in political parties is still inadequate, as the law does not include provisions guaranteeing women's participation in leadership structures of political parties. However, the May 2018 parliamentary elections saw an unprecedented number of women running for elections, nearly 2,600. As of February 2021, 26.4 percent of seats in parliament were held by women. The elections resulted in 84 over a total of 329 seats allocated to women. This indicates society's increasing confidence to elect women despite a number of challenges during the electoral campaign including defamation, intimidation, and harassment, which led to the withdrawal of some of the candidates from the electoral race.[44]

Legal Status of Iraqi Women

27. Iraq's Constitution (adopted in 2005) states that all Iraqis are equal before the law and prohibits discrimination based on sex (Article 14). The Iraqi Constitution guarantees basic human rights to all Iraqi women. Article 20 provides universal suffrage for both male and female Iraqi citizens and further states that they shall have the right to participate in public affairs and to enjoy political rights, including the right to vote, elect, and run for office. Article 30 establishes that the state "*shall guarantee to the individual and the family—especially children and women—social and health security, the basic requirements for living a free and decent life, and shall secure for them suitable income and appropriate housing*."[45]

    In addition, the following Articles of the Constitution are relevant to protection from gender-based violence (GBV): Iraqis are equal before the law without discrimination based on gender, race, ethnicity, origin, colour, religion, creed, belief or opinion, or economic and social status (Article 14). Every individual has the right to enjoy life, security and liberty. Deprivation or restriction of these rights is prohibited except in accordance with the law and based on a decision issued by a competent judicial authority (Article 15). The family is the foundation of society; the State preserves its entity and its religious, moral, and patriotic values. The State guarantees the protection of motherhood, childhood and old age and shall care for children and youth and provides them with the appropriate conditions to further their talents and abilities. All forms of violence and abuse in the Republic of Iraq, the family, school, and society shall be prohibited (Article 29). Forced labour, slavery, slave trade, trafficking in women or children, and sex trafficking are prohibited (Article 37). The Constitution, however, does not mention the most important rights for women: family-related rights, such as marriage, the right to choose a partner and those rights surrounding custody, and inheritance.

28. However, the Constitution also cites Islam as the basic source of legislation and forbids the passing of laws contradictory to its "established rulings", and Article 41 allows each religious group in Iraq to govern its own personal status matters. As a

[44] United Nations Country Team (Iraq), *Report to the Convention on the Elimination of all forms of Discrimination Against Women Committee (Confidential*), 2019.

[45]Iraq's Constitution of 2005: https://www.constituteproject.org/constitution/Iraq_2005.pdf?lang=en

result, the situation of women in Iraq very much depends on the implementation of Islamic law and on the priorities and interpretations of male-led religious authorities.[46]

National Policies and Strategies for Gender Equality[47]

29. There are several government **policies and strategies aimed at promoting and protecting women's employment and economic empowerment** such as the National Action Plan for the Implementation of United Nations Security Council Resolution (UNSCR) 1325 (NAP 1325), **the 2014-2018 National Strategy for the Advancement of the Status of Iraqi Women**, and the **Iraq Labour Law of 2015**. These laws provide paid maternity leave, prohibit discrimination against women during recruitment and in the workplace, and increase female participation in the public sphere. However, findings from the present assessment indicate that the implementation and enforcement of these policies is inconsistent, particularly in the private sector. There are no specific policies on the empowerment of rural women and neither is there a gender strategy in place for the agricultural sector.

30. The **National Development Plan** highlights the low participation of women in economic, social, and political activities and their limited role in the legislative and political institutions as one of the key challenges to development. The empowerment of women in terms of health, economics, science and security and increasing their participation in the private sector is clearly stated as an objective. The **National Strategy on Violence against Women and Girls 2018-2030**, provides an overall framework on which policy and decision makers will draw to take concrete actions aimed at preventing violence against women and girls and protecting survivors of violence.

31. Iraq ratified the most important international treaty related to gender equality: the **Convention on the Elimination of All Forms of Discrimination against Women** (CEDAW) in 1986, but has yet to ratify the Optional Protocol on violence against women. The convention espouses values and legal obligations for women's human rights that have become universal, and is often described as an international bill of rights for women. Consisting of a preamble and 30 articles, it defines what constitutes discrimination against women and sets up an agenda for national action to end such discrimination. Although Iraq is party to numerous international human rights conventions, substantial and long-standing impediments to domestic compliance with Iraq's treaty obligations remain. Iraq's current discriminatory legislative provisions illustrate that constitutional provisions alone do not guarantee women the fulfillment of their rights. Legislative change, coupled with active enforcement mechanisms, remains necessary to bring Iraq into full compliance with antidiscrimination instruments and ensure women's equal rights.[48]

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[46] Sanja Kelly and Julia Breslin, eds., *Women's Rights in the Middle East and North Africa: Progress Amid Resistance (Freedom in the World)*, 2010.

[47] Summary of laws available at: https://www2.unwomen.org//media/field%20office%20arab%20states/attachments/publications/2019/12/gender%20justice%20report%20update%202019/summaries/english/iraqsummary19eng.pdf?la=en&vs=2024

[48] Iraq Legal Development Project, *The Status of Women in Iraq: An Assessment of Iraq's De Jure and De Facto Compliance with International Legal Standards, 2005;* http://www.peacewomen.org/sites/default/files/hr_statusofwomeniniraq_aba_july2005_0.pdf

32. The Constitution of the Republic of Iraq declares that Islam is the official religion of the State, is a fundamental source of legislation, and that no law can contradict the established provisions of Islam. This provision is used to justify reservations to CEDAW.[49] Despite ratifying CEDAW in 1986, Iraq maintains reservations to Article 2(f) and (g), which call on states to modify or abolish existing laws and penal codes that discriminate against women; Article 9, which requires equal rights regarding changes and transfers of nationality; Article 16, which concerns the elimination of discrimination in marriage and family relations; and Article 29, paragraph 1, with regard to the principle of international arbitration on the interpretation or application of the convention. Article 41 of the Constitution states that Iraqis are free in their commitment to their personal status according to their religions, sects, beliefs, or choices, and this shall be regulated by law. Article 41 is controversial because of concerns that it permits new personal status laws to be proposed for different religious groups or sects (e.g., the draft Ja'fari Personal Status Law) that detract from the rights stated in the Personal Status Law No. 188 of 1959. CEDAW's concluding observations issued in 2014 recommended that Iraq repeal Article 41 because it contradicts CEDAW and the guarantee of equality before the law in the Constitution (Article 14). The CEDAW Committee also called on Iraq to withdraw the draft Ja'fari Personal Status Law, amend discriminatory provisions in the Penal Code, and expedite the issuance of a domestic violence law. Moreover, Iraq has yet to ratify the Optional Protocol to CEDAW. By ratifying the Optional Protocol, a state recognizes the competence of the Committee on the Elimination of Discrimination against Women—the body that monitors states' parties' compliance with the convention—to receive and consider complaints from individuals or groups within its jurisdiction. The Government of Iraq has not been reporting to the CEDAW Committee[50], but consultations with UN Women indicate that the Government is in process of drafting a report for CEDAW.

National Machinery for Gender

33. The Government of Iraq shut down the Ministry of Women's Affairs in 2015. In 2017, the Directorate of Women's Empowerment was officially created by the General Secretariat of the Council of Ministers by Resolution Number 4, which defines its composition and its role. In addition, the Higher Committee for the Advancement of the Status of Iraqi women and the Higher Committee for the Advancement of Rural Women Status have been restructured along with the establishment of the National group. However, the Directorate of Women's Empowerment and the two Higher Committees have no portfolio and no decision-making power, as well as no coordinating mechanism, and their recommendations are not binding. This situation has resulted in duplication, loss of synergies, and inefficiency in the implementation of women strategies and policies.[51] Gender units/sections have been established in every Ministry and an independent Women Empowerment Directorate exist at the governorate level as well.[52]

Gender-Based Violence

[49] UNDP, Iraq, *Gender Justice and the Law*, 2018.
[50] Valeria Vilardo, Sara Bittar, *Country Gender Profile - Iraq: A Situation Analysis on Gender Equality and Women's Empowerment in Iraq*, 2018.
[51] United Nations Country Team (Iraq), *Report to the Convention on the Elimination of all forms of Discrimination Against Women Committee (Confidential*), 2019.
[52] Meeting with UN WOMEN, July 2021.

34. According to the Humanitarian Needs Overview Iraq 2020 (HNO), 1.29 million people are at risk of gender-based violence (GBV) in Iraq. Of these in need, 84 percent are women, 39 percent are children, five percent are older persons and five percent are people with disabilities. Furthermore, it is also noted that 98 percent of the GBV survivors who reported GBV are women or girls and the main incidents reported are of domestic violence followed by forced/child marriages.[53] However, reporting is quite limited and most GBV survivors refuse referral to specialized services due to fear of stigma and mistrust in available services and avenues for legal redress, as well as the potential for further violence.[54]

35. Domestic violence continued to remain endemic in 2020, including the killings of women and girls by their families and husbands. While Iraq's Criminal Code criminalizes physical assault, article 41(1) gives a husband a legal right to "punish" his wife and parents to discipline their children "within limits prescribed by law or custom." The Penal Code also provides for mitigated sentences for violent acts, including murder, for "honorable motives" or for catching one's wife or female relative in the act of adultery or sex outside of marriage. Iraqi parliamentary efforts to pass a draft law against violence stalled throughout 2019 and 2020. The 2019 version of the draft anti-domestic violence law seen by Human Rights Watch includes provisions for services for domestic violence survivors, protection (restraining) orders, penalties for their breach, and the establishment of a cross-ministerial committee to combat domestic violence. However, the bill has several gaps and provisions that would undermine its effectiveness, including that it prioritizes reconciliation over protection and justice for victims.[55]

Impact of COVID-19

36. Since the onset of the COVID-19 pandemic in late February 2020 in Iraq, it has brought about a surge in unemployment and critical food security concerns for women and men. The pandemic has resulted in a significant drop in both in-kind and cash transfers. Moreover, Iraqis faced significant challenges accessing both market and healthcare services. School-going children have also been negatively impacted as only a small share of children received any catch-up or learning activities during school closures due to the pandemic. Although labor force participation in Iraq remained comparable to the pre-lockdown period (above 61 percent throughout), the unemployment rate increased significantly during the pandemic. Compared to 12.7 percent in the pre-lockdown period, the unemployment rate climbed to 29 percent in August and then fell to 23.7 percent in September, and 22 percent in October. After the initial increment, the unemployment rate among men decreased gradually but remained high and stable among women. Pre-pandemic public sector workers were most successful in holding onto their jobs. Compared to more than 30 percent of private sector workers (34.3 percent) and self-employed (32.6), only 12.6 percent in the public sector had lost their jobs permanently or temporarily or gotten out of the labor force in August. Among those unemployed prior to lockdown, 13 percent were out of the labor force in August. An estimated 6.0, 5.2, and 5.1 percent of Iraqis consumed inadequate diets in August, September, and October, respectively. The

[53] OCHA, *Humanitarian Needs Overview Iraq, 2020*; https://reliefweb.int/sites/reliefweb.int/files/resources/iraq_hno_2020.pdf
[54] Ibid
[55] Human Rights Watch, World Report, 2021.

prevalence of an insufficiently diverse diet was more pronounced among households with no working member(s) and in rural areas.[56]

37. According to the GBV Sub-Cluster Rapid Assessment on the Impact of COVID-19 Outbreak on GBV in Iraq, COVID-19 has increased the risk of GBV in Iraq through various ways.[57] Firstly, due to the restrictions on movement and confinement measures, the GBV survivors might face challenges in accessing the lifesaving GBV services including safe shelters. This is also even more striking, as there is no possibility of sheltering all the women that face abuse due to lack of a law that protects the survivors. Furthermore, it has been noted that resources might be directed to health interventions and this can lead to gaps in GBV service provision. Secondly, loss of livelihoods due to economic consequences of COVID-19 pandemic can have dire impact on women as it might increase the risk of exploitation and sexual violence. Loss of breadwinner position in household from men's side can potentially trigger intrahousehold conflict. Lastly, the crisis can increase the burden of women and girls, who are mostly the caregivers to the children, the sick and the elderly, and hence lead to an increased risk of infection. This is also valid for girls, whose schools are closed and who might be undertaking additional caregiving roles.[58]

38. The remote protection monitoring led by 12 organizations in 110 assessed sub-districts by conducting 1,442 key information interviews on June 2020 has also showed that main protection risks affecting women and girls are psychological trauma (68 percent), stress and anxiety; lack of specialized services for women (45 percent); lack of safe space and privacy (36 percent) and violence or abuse within families/households (23 percent). More than 50 percent of the interviewees also reported a significant increase in the severity of these issues. Furthermore, there has been increased reports of GBV, such as domestic violence, self-immolation, self-inflicted injuries due to spousal abuse, sexual harassment of minors and suicide, and transactional sex.[59]

Gender Norms

39. There is a persistence of deep-rooted patriarchal attitudes and stereotypes regarding women' roles and responsibilities, which discriminate against women, and is exacerbated by the sectarian and religious divisions. Indeed, the root causes of gender discrimination are due to the persistent cultural and social tribal norms often worsened by misconceptions of religious texts' interpretation that subordinate women to men, as well as the institutional, policy and legal barriers that undermine the full enjoyment of women's and girls' rights. Furthermore, women face several legal and cultural restrictions that limit their mobility and decision making, generating difficulty to move around freely, access education, jobs, land, and micro-credit finance. Such restrictions may stem from women's role in traditional societies, which was often limited by a father's, brother or husband's guardianship. The concept of men as breadwinners and

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[56] World Bank, *Iraq High Frequency Phone Survey (IHFPS) To Monitor Impacts of COVID-19 – Results from August, September and October Rounds*; https://documents1.worldbank.org/curated/en/683691618384426597/pdf/Iraq-High-Frequency-Phone-Survey-IHFPS-to-Monitor-Impacts-of-COVID-19-Results-from-August-September-and-October-2020-Rounds.pdf

[57] GBV Sub-Cluster Iraq, *The GBV Sub-Cluster Rapid Assessment on the Impact of COVID-19 Outbreak on GBV in Iraq*, May 2020; https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/assessments/gbv_sc-iraq-covid-19_assessment_report-april-may_2020.pdf

[58] Cansu Aydın, *Rapid Gender Analysis - COVID 19*, June 2020.

[59] Global Protection Cluster, *Iraq: COVID-19 Protection Situation Report*, 06 May 2020; https://www.globalprotectioncluster.org/2020/05/06/iraq-covid-19-situation-report-as-of-06-may-2020/

leaders of the household leads men to generally make the decisions for the household, and on behalf of the women. The male head of household may make unilateral decisions that impact a woman's entire life, including her participation in the job market. Studies show that the controlling behavior women are most likely to face include a husband insisting on always knowing where the woman is (63.3 percent), and insisting on the woman asking his permission to seek healthcare (66.9 percent). In addition, men are also likely to try to control women's participation in the economy. Women's economic participation can be a highly contested issue because it contradicts the traditional men-as-breadwinners concept. Unpaid care work remains a barrier to reaching gender equality as it reinforces discriminatory gender stereotypes that force women to stay in the home, limits their participation in the public sphere and prevents them from having access to the labor market. The unequal burden of unpaid care work on women, especially women in poverty, is a barrier to women's full enjoyment of their human rights, and this institutionalized inequality needs to be addressed by national policies and strategies.[60]

40. Community decisions are made by various groups, including mukhtars, community leaders, and religious and/or tribal leaders. Most of these community level decision-makers are men, and the decision-making bodies are mainly comprising of men. While some representation of women is not uncommon, the decision-making bodies and/or groups remain patriarchal.[61]

Climate Change and Gender

41. Iraq's Central Statistics Administration's data reveal that women are dealing with the shrinking of agricultural space due to drought and desertification. In fact, three million out of the 14 million acres currently available to agriculture face the threat of desertification. The combined effects have reduced prospects for viable irrigated agricultural production and diminished sustainable income-generating opportunities for rural communities. It has also negatively impacted the quality of life, especially for women and girls. For example, in a drought situation, women and girls bear the increased burden of fetching water and facilitating other basic household needs from longer distances as water resources dry up.[62] The increasing incidence of drought and water scarcity places an increased burden on women both for food production and in fetching water for basic household needs.[63]

42. There is a paucity of secondary data or studies on the impact of climate change on women in Iraq, their coping strategies and their potential role as agents to mitigate effects of climate change. The only document which provides some information on this topic is FAO's 'Regional Gender Equality Strategy for the Near East and North Africa 2017-2020, 2017'. It outlines the challenges women face in the Middle East and North Africa (MENA) region, including Iraq, with respect to climate change in these countries. A key challenge for policy and decision-makers and development partners is to understand the strategies adopted by rural women and men to address climate change

[60] Valeria Vilardo, Sara Bittar, *Country Gender Profile - Iraq: A Situation Analysis on Gender Equality and Women's Empowerment in Iraq*, 2018
[61] CARE International, *Presentation on Rapid Gender Analysis – COVID 19*, May 2020.
[62] UN Women & Oxfam. *Gender Profile – Iraq: A Situation Analysis on Gender Equality and Women's Empowerment in Iraq*, 2018.
[63] Government of Netherlands, *Climate Change Profile – Iraq*, 2018; https://reliefweb.int/sites/reliefweb.int/files/resources/Iraq_3.pdf

impacts on agriculture and rural communities. In the Near East and North Africa region, including Iraq, both women and men work in agriculture with different levels of responsibilities and workloads, which are likely to increase with climate change.

Women's productive and reproductive roles are not sufficiently recognized or accounted for in climate change mitigation and adaptation efforts, or in the context of natural disasters influenced or exacerbated by climate change both at the national and regional levels. Women generally face higher risks and more problems due to the impacts of climate change on existing poverty as a result of the numerous gender-based constraints illustrated so far. In a water-scarce country, especially in rural areas, access to safe and reliable supplies of water for productive and domestic use is limited. Women are significantly affected by water scarcity due to their role in managing both domestic and productive water use. Their unequal participation in decision-making processes and labour markets compound inequalities and often prevent women from contributing fully to climate-related planning, policy-making and implementation.

43. The strategy highlights the pressing need to identify women's roles and constraints in irrigation and agricultural development and management in the context of climate change, to analyse their priority needs, and raise awareness of the major challenges facing women and men as regards water resource management and climate change adaptation and mitigation for stakeholders, especially the government. This would provide the basis for generating realistic recommendations for reducing or eliminating barriers to women's engagement in sustainable water resource management, environmental protection and climate change resilience. In addressing water scarcity, practitioners must on the one hand, succeed in empowering women and mainstreaming gender within water management, agriculture and climate change adaptation, and on the other, succeed in improving water productivity. The lack of suitable capacity, skills and experience, and limited opportunities and time for working on these sectors remain among the most important challenges for women's participation in water and agriculture development, and climate change adaptation.

44. It emphasizes the need for legal and regulatory frameworks as well as institutional arrangements that enable the integration of gender-sensitive approaches to water resource management and decision making at different levels: national, local and regional governments. Basin, river, marine and aquifer organizations all need to enable participatory decision-making and water resources management processes across sectors using gender analysis. An intersectoral analysis of transboundary water governance that includes gender mainstreaming and adaptation strategies has the potential to be truly transformative. It further highlights the need for awareness raising and advocacy to ensure that gender equality is considered as a key issue in the water governance debate. The study maintains that the most critical points to consider for the Near East and North Africa are: 1) women's challenges in water, agriculture and climate change adaptation; 2) water governance, irrigation system expansion and extension services; 3) gender mainstreaming in water governance and adaptation; and 4) women's participation and empowerment in water governance and climate change adaptation.[64]

[64] FAO, *Regional Gender Equality Strategy for the Near East and North Africa 2017-2020*, 2017; http://www.fao.org/3/a-i7116e.pdf

45. The findings from community consultations are consistent with secondary data on climate change and gender, that farmers, both women and men, are generally aware of the effects of climate change and recognize its negative impact on agricultural yield, livestock and income. Most of the women and men consulted in the three governorates, recognized the effects of climate change, namely, *changes in rainfall patterns, water scarcity, soil salinity, higher temperatures, and frequent occurrence of dust storms*.[65]

46. With respect to impact of climate change, community consultations indicate that farmers are experiencing difficulties in agricultural activities and livestock farming on account of changes in weather patterns. For women particularly, fetching water for irrigation and domestic use is a major challenge due to water shortage (dried up lakes and rivers). A woman from Muthanna also highlighted that climate change has severely affected the cultivation of okra and other fruits, like watermelon, during summer (particularly July and August) because of frequent dust storms and high temperatures. Women and men, across all three governorates, also highlighted the loss of livestock animals due to dry and hot weather. Overall, small-scale farmers' yield and income has taken a major hit due to effects of climate change, to the extent that many do not depend on agriculture as their primary source of food and livelihood anymore; they buy imported vegetables and canned food (powder milk) from the local market, which is comparatively cheaper than subsistence farming.[66]

47. Another important finding from the consultations is that small-scale farmers are not fully equipped to cope with the effects of climate change to maintain a certain level of agricultural output and generate a decent income, which has led to a significant proportion of farmers leaving the sector. Farmers are using traditional techniques and methods to address effects of climate change, but overall, they are ill-equipped to deal with the rising challenges. For example, to protect livestock from extreme temperatures, a prevalent practice is to build a roof over their sheds. Other common coping methods include drilling wells for water, plastic covers for crops, or covering warehouses to safeguard harvest from storms. Thus, the challenges stemming from climate change accompanied by rising costs of inputs has rendered agriculture an insufficient and unreliable source of livelihood for rural households in the target governorates. Women and men farmers in Muthanna reported that a sharp decline in agricultural income has forced many farmers to leave farming; men are seeking government jobs, while women have switched to other sources of income like sewing and handicrafts.

Gender in Climate Change Policies and Strategies

48. The **Climate Change Profile Iraq (2008)** acknowledges daunting climate-related challenges faced by small farmers and livestock producers, including decreased rainfall and run-off and increased temperatures, which are contributing to widespread desertification, but does not specify how women are specifically affected by climate change. **The National Environmental Strategy of Iraq** has as one of its goals to "Improve quality of life and livelihood from an environment and health perspective, protect natural environment, and use and support sustainable practices", and briefly indicates that there is a need to reach out to NGOs and farmers so they can play a role

[65] See Annex 8A – Report on Community Consultations
[66] Ibid.

in its implementation. However, there is no specific acknowledgment of the role of women in responding to climate change related challenges. The ***United Nations Development Assistance Framework*** **(UNDAF)** ***2015-2019***[67]**,** in partnership with the Government of Iraq, sets out the collective response by the UN system to national development priorities, which in turn are explicitly based on the programming principles of the UN Development Group (UNDG). The UNDAF prioritizes environmental sustainability to combat desertification and climate change, gender equality and the building of resilience of women, youth and capacity development.

Key Initiatives in Climate Change & Agriculture with a Gender Focus

49. A GCF readiness support project for ***Building capacity to Advance the National Adaptation Plan (NAP) Process in Iraq*****, 2020-2022, UNEP**. The NAP process aims to reduce vulnerability to the negative impacts of climate change, especially in developing countries, through strategic planning based on projections of future climate change. NAPs are seen as one of the most important mechanisms for adapting to climate change. The three-year project, funded by the GCF with over USD $2.5m, will support Iraq to formulate and implement its NAP, with a particular focus on strengthening institutional, technical and financial capacities to ensure that medium- to long-term adaptation needs are integrated into national development planning. A key aspect of Iraq's NAP process is to identify, assess and bridge existing gaps in climate knowledge, as these gaps constitute barriers to long-term climate planning across local, regional and national planning processes. Climate risk assessments will be carried out to identify the livelihoods and sectors most threatened by climate impacts, as well as the most urgent adaptation priorities.

50. The project launched in September, 2020, and aims to mainstream gender in all its activities. It is aiming for 50 percent representation of women in consultations and campaigns. However, in the project document, few specific strategies for mainstreaming women are mentioned. The document specifies that vulnerability assessments will focus and report separately on vulnerable groups such as women, youth, elderly people and people with disabilities, and adaptation options will have a special focus on vulnerable groups. The National Adaptation Plan technical team will have gender as one of the cross-cutting working groups. On these groups, representation of civil society organizations representing women, youth and indigenous people and women parliamentarians will be ensured. A stock taking exercise included climate vulnerabilities of communities and their livelihoods is still in draft form and the report of the Climate Risk Assessment is still in process.

51. ***Smallholder Agriculture Revitalization Project and the Building Resilience of the Agricultural Sector to Climate Change***, **2017-2025**, **IFAD**, (Muthanna, Qadisiya, Missan and Thi-Qar). This project is still in the initial stages of implementation. Under this project women and men are to be provided training in climate resilient approaches and technologies that would enhance crop and livestock production. The project's gender strategy includes the following measures: Gender targets of at least 40 percent for the total of project beneficiaries; working with NGOs at governorate level that either specialise in or have a proven track record of working with women; a tentative pre-selection of activities that is heavily skewed in favour of women's direct participation (beekeeping, vegetable farming, small livestock rearing, off-farm activities such as sewing, etc.); gender sensitive selection of interventions to maximise returns to

[67] United Nations Country Team Iraq, United Nations Development Assistance Framework 2015-2019, 2014; https://planipolis.iiep.unesco.org/sites/default/files/ressources/iraq_undaf-15-mar-2015.pdf

women's labour and support their social and economic empowerment; the selection of productive infrastructure will need to be endorsed – separately – by women; a gender inclusive programme management and implementation team; and adherence to best practices in gender sensitive monitoring and evaluation of programme impact. The project has only been able to hire core staff and has yet to begin field activities

52. ***Promoting Sustainable Land Management for Improved Livelihoods in Degraded Areas of Iraq*, 2019–2023, Global Environmental Facility (GEF) and FAO** (Muthanna & Thi-Qar). The GEF-funded project being implemented by FAO aims to reverse land degradation, conserve land and water resources, and improve sustainable management of the marshland ecosystems in southern Iraq to increase access to resilient ecosystem services and recover livelihoods. The project will target national and local actors to promote sustainable land and water management practices, environmental conservation approaches and effective monitoring techniques. It recognizes the critical role women play in agriculture and climate resilient eco-systems. Thereby, all project related and relevant government policies, programmes and schemes will formally recognize and embed objectives related to improving the quality of life for rural women. This includes all activities related to each of the outputs. Similarly, all strategies and other policy improvements under will formally recognize gender-based objectives. A set of training and extension programs will be tailored specifically for women's needs as defined and supported by women. This will likely include enhanced income of women; participation in higher links of value chains; and, identification of gender specific activity improvements. This will be augmented by funding and support for women exclusive initiatives. This project is in initial stages of implementation. Project staff highlighted the challenge of reaching women for the baseline survey and including questions on gender issues in the survey questionnaire. The lesson learnt is that when surveys are being implemented through government staff, gender awareness sessions need to be incorporated into the training for the survey to facilitate the inclusion of women in the survey sample and the quality of the data to be collected on gender issues.

53. ***Restoration and Strengthening the Resilience of Agri-food Systems in Southern Iraq*, 2021-2023, FAO.** The objective of this project is to enable poor smallholder farmers and landless rural households in Basrah, Missan and Thi-Qar Governorates to improve agricultural productivity and income generation while enhancing land and water resources and bio-diversity. The project will therefore consider and support: (i) the needs, priorities and constraints of women, as applicable to horticultural and livestock production and agri-food processing; (ii) women's equitable access to and control over productive resources and agri-food micro-enterprises; and (iii) women's greater participation in and benefit from the project. A minimum of 30 percent of the farmers that directly benefit from on-farm water management (OFWM) training, horticultural and livestock equipment and input packages will be women. Similarly, 75 percent of the individuals establishing homestead/group-based agri-food micro-enterprises and benefitting from post-harvest management (PHM) equipment, utensils, containers and materials will also be women. During its Inception Phase, the project will undertake gender-sensitive, socio-economic baseline survey, awareness campaigns and market analysis of selected commodities within shortlisted rural communities. These analyses will disaggregate data by gender and age to assess smallholder income needs, determine their livelihood skills base, capture their economic ambitions and identify opportunities skills for development, job creation and agri-business formation. The surveys will further reveal women's challenges and

opportunities within rural communities, and any existing agri-food micro-enterprises in the project's target areas that have the potential to employ more women. In this regard, the project's targeting criteria will be determined and adjusted in order to meet the demands of women and youth. This project is also in the initial stages of implementation and finalizing its rapid needs assessment.

54. ***Support to Agricultural Livelihoods of Rural and Peri-urban returnees and communities in Ninevah Governorate*, Iraq, 2019-2022, FAO.** The project uses an integrated approach that will support smallholder farm families to diversify incomes, increase resilience and provide nutritious and healthy diets through a comprehensive set of packages, including cash, short-term employment through cash for work (CfW), agricultural inputs, training and strengthening of market linkages – under a scenario of climate change and variability and conflict sensitivity. The main interventions support 1) vulnerable smallholder crop and livestock farmers with i) vegetable production and marketing systems rehabilitated and strengthened; ii) small-scale agri-food processing, marketing and micro-enterprise systems developed; and iii) improved small-scale dairy processing and marketing systems developed; and 2) smallholder crop and livestock farmers with iv) efficient irrigation water use and management measures and technology introduced; v) increased availability of quality cereal and legume seeds; and vi) improved small-scale animal fodder production, conservation and marketing systems developed. While equal opportunities will be given to women in affected rural and peri-urban areas to participate in and benefit from all sub-programme interventions, they will be specifically targeted for homestead-based vegetable, poultry and dairy production and processing ventures. Similarly, the affected rural and peri-urban youth (especially unemployed agricultural graduates) will be encouraged to benefit from training to gain employment as agri-food processors, farmer field school and farmer business school facilitators, community animal health workers, market information system operators and food security and nutrition data collectors and analysts. The project reports success in reaching out to women dairy processors who have appreciated both the training and the equipment they were given. The electric scythes which have been given to women to cut fodder have also been appreciated as they reduce women's labour.

55. ***The Project for Sustainable Irrigation Water Management through Water Users Associations (WUA) in the Republic of Iraq*, 2017-2021, JICA.** The overarching goal of the project was that sustainable water management areas operated by WUAs are expanded to the whole country. The project purpose, sustainable water management model, consisted of three factors, namely: 1) Participatory irrigation development plan 2) Improvement of water management by WUA, following the above-mentioned plan, 3) Monitoring and improvement of WUA activities by Water Users Associations Management Teams (WMT). The project aimed to develop the model for improving water management by WUA through formulation and implementation of action plans by WUA in the model sites selected. The action plans were named the Participatory Irrigation Development Plan (PIDP), and necessary manuals were developed in addition to capacity development of trainers for nationwide expansion of the model. In order to promote gender mainstreaming in the project, gender training was delivered to the majority of all the task teams (TT) formed to monitor WUAs onsite and 18 WMT members and project implementers cooperated actively in subsequent gender activities. In addition, in February 2019, TT and WMT held a briefing session for WUA board members on both model sites to gain the understanding of WUA male members about the gender activities of the Project. This resulted in the consent of WUA board

members to support gender activities under the condition that men and women are separated. In response to prevailing traditional social norm of gender segregation in rural areas, female WMT members were appointed in all WMTs. Lastly, to further extend women's participation to other WUAs, the WUA Management Manual for WMT recommended activities such as the establishment of a women's subcommittee as a mechanism to constantly carry out gender activities. As of January 2021, 15 out of 18 WUAs have listed gender activities in PIDP. Of these, seven WUAs actually held women's meetings or established women's subcommittees. The other 8 WMTs were unable to engage in gender activities due to ongoing restrictions due to the COVID-19 pandemic.

The lesson learnt from this project is (i) gender training can help to create space for women's inclusion and (ii) indirect representation of women through nominating a small committee from among women relatives of the WUA members does not constitute meaningful participation of women and completely excludes women-headed households. Discussions with project staff showed that it is possible for women famers to have direct representation and for women-headed households to be included in the decision-making body in a culturally sensitive manner with appropriate planning

56. The WFP is in the process of developing a proposal for the GCF on ***Promoting Climate Resilient Livelihoods for Food Insecure People in Southern Iraq*.** This project aims to introduce practices that build the resilience of vulnerable households whose livelihoods are at risk from climate change. This will be achieved through: increased irrigation efficiency and water availability; enhanced agricultural productivity through the promotion of stress tolerant seed varieties; fostering multi- level efforts for mentoring and capacity strengthening; improved climate decision- support tools and services; as well as livelihood diversification through provision of climate-resilient economic assets. The following measures for mainstreaming women are proposed: Gender targets of at least 40 percent for the total of project beneficiaries; working with NGOs at Governorate level that either specialize in or have a proven track record of working with women; criteria for selection of adaptation and economic diversification activities that is heavily skewed in favor of women's direct participation (vegetable farming in tunnels, agri-processing, etc.); gender sensitive selection of interventions to maximize returns to women's adaptive capacities and support their social and economic empowerment; a gender inclusive programme management and implementation team; and adherence to best practice in gender sensitive monitoring and evaluation of programme impact.

57. WFP staff highlighted the lack of gender disaggregated data and studies on women's livelihoods and the impact of climate change on women, constituted a challenge in designing the proposal. However, they were able to hold consultations with women and elicit feedback on key gender issues through hiring a consulting company to conduct the survey. The activities for women included livelihood diversification and creating market linkages for women's home businesses. Women-headed households were to be targeted through giving them training in farming practices as in the project area they were mostly found to be involved in agriculture.

58. The IOM has been involved with livelihood training, including training for farmers. Women have been included in livelihood activities with typically a 30 percent quota. IOM had trained women farmers through the Directorate of Agriculture for periods ranging from two weeks to two months but climate change aspects had not been incorporated into the training. The grants given to farmers ranged from USD 1,500 to

USD 1,700 which included some equipment and the cost of training. Value Chain studies have been conducted in Muthanna, Najaf and Kerbala. The key lessons learnt shared by IOM were that the most significant challenges for women appear to be normative ones – cultural barriers to participation and that a market-oriented approach should be followed when developing livelihood strategies for vulnerable households.

Socio-Economic Profile of Target Governorates – Kerbala, Muthanna, and Najaf

59. **Population:** The latest population modeled estimate puts total population of the three governorates around 3.6 million. Women constitute around 49.5 percent of the total population in the country with target governorates recording slightly higher percentages than the national average (49.6 to 49.9 percent). Overall, the three governorates are among the less populated governorates in Iraq. Among the three governorates, Najaf is the most populated (1.5 million) and Muthanna has the least number of people (0.8 million).[68]

Table 4: Population of Target Governorates: Kerbala, Najaf, Muthanna

	Total Population	Women	Men	Share of Female (%)	Avg. HH Size[69]	Population Share (%)	Total Number of Villages[70]
Kerbala	1,250,806	619,831	630,975	49.6	6.3	3.2	288
Muthanna	835,797	415,805	419,992	49.7	7.6	2.1	538
Najaf	1,510,338	753,091	757,247	49.9	6.3	3.9	489
National	39,127,889	19,359,565	19,768,324	49.5	6.0	--	--

Source: Directorate of Population and Labour Statistics, Government of Iraq, 2019 / Data on Average HH Size is taken from Comprehensive Food Security and Vulnerability Analysis (CFSVA) 2016 / Data on number of villages taken from Governorate Rural Development Surveys (2017)

According to a World Bank poverty mapping study (2015), Muthanna is the poorest governorate in Iraq, and proportion of poor Iraqis in Muthanna is nearly triple that of Iraq's national average (6.4 percent versus 2.1 percent).[71] In addition, an overwhelming majority of households in the three governorates receive Public Distribution System Ration Cards.[72] After the outbreak of the COVID-19 pandemic, overall poverty has increased by 11.7 percent, making the poverty rate 31.7 percent compared to 20.0 percent in 2017-2018.[73] This translates to 4.5 million additional poor as a result of the crisis, adding to the already 6.9 million living in poverty before the pandemic.[74]

[68] Directorate of Population and Labour Statistics, Government of Iraq, 2019.
[69] WFP, FAO, CSO, Government of Iraq, *Comprehensive Food Security and Vulnerability Analysis (CFSVA)*, 2016.
[70] CSO, Ministry of Planning, Government of Iraq, Respective Governorate Rural Development Survey, 2017.
[71] World Bank, *Where are Iraq's Poor: Mapping Poverty in Iraq*, 2015; https://documents1.worldbank.org/curated/en/889801468189231974/pdf/97644-WP-P148989-Box391477B-PUBLIC-Iraq-Poverty-Map-6-23-15-web.pdf
[72] WFP, FAO, CSO, Government of Iraq, *CFSVA*, 2016.
[73] World Bank, UNICEF, Government of Iraq, *Assessment of COVID-19 Impact on Poverty and Vulnerability in Iraq,* July, 2020; https://www.unicef.org/iraq/media/1181/file/Assessment%20of%20COVID-19%20Impact%20on%20Poverty%20and%20Vulnerability%20in%20Iraq.pdf
[74] ibid

Table 5: Poverty and Vulnerability

	Multi-dimensional Vulnerability Index[75] (MVI)	Share of Poor (%) based on MVI	HHs Receiving Public Distribution System Ration Cards (%)
Kerbala	0.143	2.9	98.1
Muthanna	0.258	3.1	98.8
Najaf	0.145	3.6	99.3
National	0.173	--	94.7

Source: COVID-19 Impact on Poverty and Vulnerability (2020) / Data on Public Distribution System Ration Cards is taken from CFSVA, 2016.

60. **Education:** Illiteracy is widespread in the target governorates, especially among women, and the prevalence rate is highest in Muthanna (30 percent).[76] In Kerbala, 22 percent women are illiterate as compared to 14 percent men. Although the completion rates vary in the target governorates, the trend of decreasing completion rates as the level of education increases is common to all, i.e., primary level completion rates are nearly twice that of upper secondary level. In Kerbala, 72 percent of students completed primary level education, 43 percent graduated from lower secondary, and 39 percent completed upper secondary.[77] The education completion rates are even lower in the other two governorates, where merely 24 percent completed upper secondary in Muthanna and 37.5 percent completed it in Najaf.[78]

61. As for gender disparities, percentage of total completion rates of primary and upper secondary education is higher for boys than for girls, whereas, it is slightly higher for girls at the lower secondary level than boys. Moreover, completion rates for all three levels of education are higher in urban areas and households in high wealth quintiles.

Table 6: Illiteracy and Completion Rates (Primary to Upper Secondary)

	Illiterate (%) (>= 6 years of age)	Illiterate – male (%)	Illiterate – female (%)	Completion Rates – Primary	Completion Rates – Lower Secondary	Completion Rates – Upper Secondary
Kerbala	17.8	14.2	21.6	71.7	43.4	39.0
Muthanna	30.3	22.7	37.8	68.7	29.9	23.9
Najaf	20.5	15.4	25.8	64.7	39.9	37.5
National	17.8	12.9	22.8	75.7	46.4	44.3

Source: Data on illiteracy taken from CFSVA, 2016 / Data on completion rates taken from Iraq MICS 2018.

62. **Children's Health and Nutrition:** Within the three governorates, Kerbala has the highest mortality rate, in the range of 30 – 40 percent, strikingly higher than the national average of 26 percent, whereas, the mortality rates in Muthanna and Najaf are relatively lower, falling in the range of 10 – 20 percent. Compared to national level rates, the incidence of stunting is noticeably greater in Muthanna, almost 14 percent versus 10 percent. Conversely, prevalence of wasting among children under the age of five years in Kerbala and Najaf is quite high in comparison to Muthanna and the

[75] A multidimensional index tailored to measure social deprivation in dimensions affected by the crisis. The index includes four dimensions measured at household level, namely education and health dimensions capturing access to services, and living conditions and financial security dimensions capturing household living standards and resilience to cope with shocks.
[76] WFP, FAO, CSO, Government of Iraq, *CFSVA*, 2016.
[77] CSO, Government of Iraq and UNICEF, *Iraq Multiple Indicator Cluster Survey* (MICS), 2018.
[78] ibid

national rate. The incidence of overweight children is significantly lower in Kerbala, compared to Muthanna and Najaf, where the prevalence rates are closer to the national rate.[79] A significantly greater proportion of children in Najaf (69.2 percent) receive minimum dietary diversity compared to Kerbala (52.4 percent) and Muthanna (38.8 percent). As for under-5 mortality rate, the occurrence is relatively lower in Muthanna and Najaf compared to the national rate of 26 percent and Kerbala, where the incidence is alarming high (30 to 40 percent).

Table 7: Children's Health/Nutrition Indicators

	Stunted (moderate and severe) (%)	Wasting (moderate and severe) (%)	Overweight (%)	Children received Minimum Dietary Diversity (%)	Under 5 Mortality Rate[80]
Kerbala	8.1	3.3	3.2	52.4	30.1 - 40
Muthanna	13.9	1.9	6.7	38.8	10.1 - 20
Najaf	9.1	5.0	6.4	69.2	10.1 - 20
National	9.9	2.5	6.6	44.6	26

Source: Iraq MICS 2018, / Data on Under-5 mortality rate is taken from Iraq Socio-Economic Atlas, 2019.

63. **Women's Health and Nutrition:** Regional data on maternal mortality ratio is unavailable, but the national ratio is around 79 maternal deaths per 100,000 live births.[81] Overall the percentage of women experiencing acute malnutrition in the target governorates is low. Less than one percent of women are severely malnourished in the three governorates, while about 3 to 7 percent of women in Kerbala and Muthanna are moderately malnourished. However, from a nutrition point of view, about 11 percent of women in Muthanna are overweight, which is significantly higher than the national rate of two percent.[82]

64. The highest percentage of pregnant women who received care (at least 1 visit by skilled provider) among the three governorates was in Najaf governorate, closely followed by Muthanna. It is worth noting that the Kerbala has one of the highest percentage of women who have undergone at least four ANC visits, 78.4 percent, not only among the three target governorates, but in the country. In addition, the prevalence of skilled attendance at birth is notably high in all three governorates (around 95 percent or higher), particularly in Najaf (98.5 percent).[83]

Table 8: Women's Health/Nutrition Indicators

	Maternal Mortality Rate	Moderately Malnutrition (%)	Women's Nutrition – Overweight (%)	ANC: At least 1 visit (skilled provider)	Skilled Attendance at Birth
Kerbala	--	3.1 – 7	10.1 – 20	89.9	94.6
Muthanna	--	3.1 – 7	10.1 – 20	92.6	96.7
Najaf	--	0 – 1	0 – 10	92.9	98.5
National	79	--	--	87.6	95.6

Source: Data on Malnutrition taken from Iraq Socio-Economic Atlas, 2019 / Data on ANC and Skilled Attendance at Birth taken from Iraq MICS 2018 / Data on Maternal Mortality Rate taken from World Bank Group modeled estimates – September 2019.

[79] CSO, Government of Iraq and UNICEF, *Iraq Multiple Indicator Cluster Survey* (MICS), 2018.
[80] World Food Programme, *Iraq Socio-Economic Atlas*, 2019.
[81] WHO, UNICEF, UNFPA, World Bank Group and United Nations Population Division - September 2019; https://data.worldbank.org/indicator/SH.STA.MMRT?locations=IQ
[82] World Food Programme, *Iraq Socio-Economic Atlas*, 2019.
[83] CSO, Government of Iraq and UNICEF, *Iraq Multiple Indicator Cluster Survey* (MICS), 2018.

The fertility rate is significantly higher in Muthanna (5.1) compared to Kerbala (4) and Najaf (3.9), both of which are somewhat closer to the national fertility (3.6). Moreover, use of contraception among married women (any method) hovers in the range of 45 to 56 percent at both the national and regional levels.[84]

Table 9: Women's Fertility and Contraception Use

	Total Fertility Rate (women age 15 - 49 years)	**Use of any contraception method among married women**
Kerbala	4	56.2
Muthanna	5.1	45
Najaf	3.9	48.1
National	3.6	52.8

Source: Iraq MICS 2018.

65. **Employment:** Muthanna has one of the highest unemployment rates, 14.5 percent, among the three governorates. The unemployment rate is roughly 9.5 percent in Najaf and 7.1 percent in Kerbala. Within the three governorates, women's unemployment is highest in Najaf, 31.4 percent, which is significantly greater than the national average of 22 percent. In comparison to 81 percent at the national level, nearly 90 percent of women, excluding internally displaced persons (IDPs), are out of the labor force in Muthanna, 79 percent in Najaf, and 76 percent in Kerbala; women's labor force participation is markedly low in the target governorates and unemployment is a significant national issue.[85]

Table 10: Labor Force Participation and Employment Rates

	Unemployment Rate (%)			**Labor Participation Rate (%)** (residents / excluding IDPs)			**Out of Labor Force (%)** (residents / excluding IDPs)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Kerbala	4.5	27.8	7.1	78	16	70	21	76	27
Muthanna	14.0	18.6	14.5	70	10	63	25	90	32
Najaf	6.5	31.4	9.5	80	19	74	18	79	25
National	8.5	22.2	10.8	81	16	74	17	81	24

Source: CFSVA, 2016.

66. **Food Security:** The majority of the area in Najaf and Muthanna is categorized as Drought Prone Desert Area, while Kerbala is considered Food Deficit Semi-Arid Rangelands.[86] Although the proportion of food insecure households in Kerbala and Najaf and comparatively is lower than Muthanna, the share of households vulnerable to food insecurity is alarmingly high in all three governorates—65 percent in Kerbala, 67 percent in Muthanna, and 87 percent in Najaf.[87]

Table 11: Food Security

	Food Security Zone	**Food Secure HHs (%)**	**Marginally Food Secure HHs / Vulnerable to Food Insecurity (%)**	**Food Insecure HHs (%)**

[84] CSO, Government of Iraq and UNICEF, *Iraq Multiple Indicator Cluster Survey* (MICS), 2018.
[85] WFP, FAO, CSO, Government of Iraq, *CFSVA*, 2016.
[86] World Food Programme, *Iraq Socio-Economic Atlas*, 2019.
[87] WFP, FAO, CSO, Government of Iraq, *CFSVA*, 2016.

Kerbala	Food Deficit Semi-Arid Rangelands	28.9	65.2	5.9
Muthanna	Drought Prone Desert Area	22	66.7	11.3
Najaf	Drought Prone Desert Area	10.3	87.3	2.5
National	--	44.3	53.2	2.5

Source: CFSVA, 2016 / Data on Food Security Zones taken from Iraq Socio-Economic Atlas, 2019.

67. **Access to Land:** The vast majority of agricultural households in Kerbala do not own the land but retain control, as in use of the land, (70.8 percent) through contracts with the government and 13 percent farm on government owned land. In the case of Muthanna, 44.5 percent agricultural households contract farmland, while 39.7 percent own it, the highest proportion of households who own land among the three governorates. Similar to Kerbala, nearly half of the agricultural households in Najaf do not own the land but control it (48.6 percent), while a significant proportion, 10.9 percent, rents it without a contract.[88]

Table 12: Agricultural Households Access to Land

	Agricultural households (%) – *Own land*	**Agricultural households (%) – *Not owned but has control***	**Agricultural households (%) – *Contracted***	**Agricultural households (%) – *Government land***	**Agricultural households (%) – *Rented without contract***
Kerbala	16.1	70.8	0.1	13.0	0.0
Muthanna	39.7	4.4	44.5	4.7	6.7
Najaf	28.6	48.6	10.3	1.6	10.9
National	46.6	20.7	25.1	3.4	3.8

Source: CFSVA, 2016.

68. Community consultations suggest that the majority of women in target governorates do not own or rent land for agricultural purposes. Women who do own land were reported to have landholding sizes that were considerably smaller than those of men's; 5-10 acres for women versus 450-1,000 acres for men. Similarly, women generally do not rent land in Kerbala and Muthanna, but key informants from Najaf suggest that women, three to five women per village, do in fact rent land for farming in their Governorate.[89]

69. **Agriculture:** In the target governorates, women are involved in the complete farming life cycle, from cultivation to selling produce, i.e., there are few stages or activities exclusive to men now. Particularly in Kerbala and Najaf, women play a lead role in the agriculture sector, sharing the responsibility of land preparation (women operate tractors in Kerbala), planting/sowing, irrigation, applying fertilizer, weeding, harvesting, and even marketing. In Najaf, the transplanting of rice seedlings is done exclusively by women. While women do not participate in land preparation and marketing produce in Muthanna, it is generally the women's responsibility to manage family's livestock and poultry in the target governorates. Women are particularly involved in harvesting, growing vegetables and alfalfa. Across all three governorates, women are highly

[88] WFP, FAO, CSO, Government of Iraq, *CFSVA*, 2016.
[89] See Annex 8A – Report on Community Consultations

involved in livestock rearing and are reported to have most control over income from selling livestock produce.[90]

Table 13: Division of Agricultural Activities by Gender

	Land Preparation / Ploughing		Seed Sowing / Planting		Irrigation / Fertilizer / Weeding		Harvesting / Threshing / Storage		Marketing		Rearing Livestock	
	F	M	F	M	F	M	F	M	F	M	F	M
Kerbala	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NEI[91]	NEI
Muthanna		✓	✓	✓	✓	✓	✓	✓		✓	✓	NEI
Najaf	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NEI	NEI

Source: Consultation with Iraqi NGOs operating in target Governorates.

70. The community consultations confirm that women farmers are actively involved in every stage of the farming process from ploughing, sowing/planting seeds, watering, till harvesting. Interviews with key informants and women-headed households suggest that the type of crops that women farmers cultivate vary by governorate, but nearly all women maintain a kitchen garden for domestic consumption. Most women in Kerbala cultivate palm trees and a variety of fruits and vegetables like okra, eggplant, pomegranates, apricots, and oranges. In Najaf, the two main crops women cultivate are wheat and rice, along with vegetables, such as okra and eggplant. Whereas, in Muthanna, women mainly maintain vegetable gardens, producing vegetables like okra, tomatoes, cucumbers, onions, and lettuce. The role of women in decision-making on agricultural activities is limited. Decisions are made primarily by men. A few of the women key informants in Najaf stated that women may share their opinions with male members of the family regarding what crop to plant, but ultimately, a male member of the family makes the final decision.[92]

71. Alongside agriculture, livestock and poultry farming is the other major source of income for women in target governorates. Among the women interviewed from women-headed households, majority were involved in either livestock rearing or poultry farming as a secondary source of income. One woman from Muthanna reported raising livestock to sell dairy products like milk and cheese, while one raised chickens and geese (known as Al-Basha in the south) to sell in the birds' market. One woman from Kerbala also mentioned sewing as a source of income, while only one woman, across the three governorates, did not report any other income-generating activity. Data from interviews with key informants is consistent with that of women-headed households, as majority of the respondents' cited livestock and poultry farming as secondary sources of income for village women, apart from selling vegetables or agricultural products.

72. In community consultations, some women key informants from Najaf and Kerbala, and men key informants in the three governorates, did report men farmers taking loans for agriculture, but women farmers taking loans for agricultural activity or another source of livelihood does not appear to be a common practice across the three governorates.

[90] Meetings held with Directorate of Water Resources in Najaf, Kerbala and Muthanna, Extension Units within the Ministry of Agriculture and NGOs working in the three Governorates.
[91] NEI: Not enough information was provided in the discussions on this aspect.
[92] See Annex 8A – Report on Community Consultations

The only woman farmer who reported taking a loan from the bank had taken it to build a house, not to invest in an income-generating activity.

73. Community consultations suggest that women's role in marketing agricultural produce is limited due to social norms. Women are likely to stay close to their home, farm, or village to sell merchandise instead of going to local markets themselves and some reported selling their produce through their sons or husbands. However, there are exceptions with some women taking their produce to local markets. Generally, older women are more likely to access to local markets.

74. **Access to Extension Services**: With the Ministry of Agriculture (MOA) at the national level, every governorate has a Department/Directorate of Agriculture and Center of Training and Extension. Every Directorate of Agriculture houses an Extension Unit along with agriculture field units at the village level (cluster of 4-5 villages), which also have a sub-unit of extension. The main activities of the Directorate of Agriculture are to disseminate latest information on cropping, train and educate farmers, conduct field surveys, and develop yearly plans. In the case of Najaf, there are also three separate units geared towards supporting women in rural areas, Al Abbasiya in the north, Al Mishkab in the south, and one in the center in the Agriculture Directorate. The agriculture field units are tasked to deliver training and conduct direct consultations with farmers in the area. The themes or topics covered in training or workshops include, but not limited to, tailoring, sewing, raising domestic birds, the importance of preserving the environment, food industries, home vegetable gardens, encouraging girls to study and growing summer vegetables. Table 14 and 15 provide a breakdown of extension staff and agriculture field offices by governorate.

Table 14: Field Agriculture Offices/Units and Extension Staff by Governorate

	Agriculture Field Units at the Village Level	Ext. Officers in Directorate of Agriculture (Men)	Ext. Officers in Directorate of Agriculture (Women)	Ext. Officers in Directorate of Agriculture (Total)
Kerbala	9	15	10	25
Muthanna	7	10	5	15
Najaf	10	18	4	22

Source: Interviews with extension staff in each Governorate.

Table 15: Extension Officers in Center for Training and Extension by Governorate

	Ext. Officers in Center of Training and Extension (Men)	Ext. Officers in Center of Training and Extension (Women)	Ext. Officers in Center of Training and Extension (Total)
Kerbala	33	7	40
Muthanna	9	3	12
Najaf	13	4	17

Source: Interviews with extension staff in each Governorate.

75. Community consultations with men and women across the three governorates, suggest that women have little to no interaction with government appointed agricultural extension officers in villages, and it is predominantly men who engage with them upon their visits. As the majority of the agricultural extension officers are men, local social norms and traditions prevent women from interacting with them. In Kerbala, men and women farmers and key informants could not recall extension officers' visiting their

respective village in the last three years, while respondents from Najaf mentioned some field visits in the past year. In case of Muthanna, none of the women remembered any visits, but a male farmer clarified that visits were reduced to once a year due to restrictions on social gatherings owing to the COVID pandemic. They highlighted the need to recruit more women agricultural extension officers.[93]

76. Women and men farmers offered suggestions on how women could benefit from extension services. Women from Muthanna and Najaf proposed enlisting more women extension officers who would make frequent field visits to train women on modern agricultural methods and address their problems. These officers, it was proposed, should deliver training seminars designed exclusively for women farmers (existing structures like schools in villages can be utilized as training venue) and listen to women farmers' concerns, and provide support accordingly. Men farmers from Najaf and Muthanna also acknowledged the need to increase number of field visits per year and inclusion of female extension officers in field teams. In Muthanna, it was suggested field visits should be coordinated with the harvest schedule, while in Najaf it was noted that the provision of both technical and subsidized inputs (seeds, fertilizers) was important. Some of the women farmers from Kerbala indicate that a substantial number of women in the region believe that coordination between village farmers and extension officers is men's responsibility or domain. On the other hand, men farmers suggested that women farmers should receive training and awareness on irrigation, marketing, sustainable energy (solar power). The need for better and direct coordination between the local government and Department of Agriculture to reach more farmers was also highlighted.[94]

77. **Women-headed households:** Twelve percent of households in Kerbala are women-headed, 11 percent in Muthanna, and 11 percent in Najaf. Moreover, women-headed households that own or have control over of farmland is comparatively higher in Muthanna and Najaf (5 to 8 percent) than Kerbala (1 to 4 percent). Similarly, a significantly greater percentage of women-headed households' own livestock in Muthanna (5 to 10 percent) than Kerbala and Najaf (0.1 to 5 percent).[95]

Table 16: Female-headed Households

	Female-headed households (%)	Female headed households that owned or had control of farmland (%)	Female-headed households that owned livestock (%)
Kerbala	11.6	1 - 4	0.1 - 5
Muthanna	11.5	5 - 8	5.1 - 10
Najaf	10.6	5 - 8	0.1 - 5

Source: CFSVA, 2016.

78. In community consultations, women heads of households in the three governorates highlighted lack of state and institutional safety nets, financial support for their income-generating activities and job opportunities for women in villages as three of the main challenges faced by women-headed households. As the primary breadwinners, these women exercise control and have much greater decision-making power than most

[93] See Annex 8A – Report on Community Consultations
[94] Ibid.
[95] WFP, FAO, CSO, Government of Iraq, *CFSVA*, 2016.

women in male-headed households. In all three governorates, these women maintained that they were the primary decision-makers in agriculture/livestock, household expenses, decisions related to children's education, and other household affairs. However, women headed households struggle with finding employment that ensures steady income outside of farming or harvest seasons. As farmers, they identified the following as key challenges: high costs of inputs, purchase of modern agricultural equipment attacks on crops by pests and insects, and soil salinity caused by inadequate. The women acknowledged that the Government of Iraq did offer social welfare salary/aid to widows and women heads of households, but coverage was reported to be variable and disbursement of the stipend irregular. A few women interviewed women in Najaf and Muthanna had applied for the stipend, but had still not received approval. One woman from Muthanna reported that she used to receive the welfare salary, but recently it had been discontinued.[96]

79. **Women & Water:** In all three governorates, community consultations indicate that women use open earth canal water (or water from nearby river/lake) for multiple purposes, including but not limited to, domestic activities (drinking, laundry, washing), irrigation, and livestock (buffalo wallow, cleaning animals). Although, it is primarily women's responsibility to fetch and transport water from canals or rivers to their homes or farms, at present, women are not members of any local committee or association that makes decisions related to provision of water. In contrast, men farmers in Muthanna were all part of some water related committee as were some of the farmers in Najaf. However, in Kerbala none of the men farmers consulted had membership of any water management committee.[97]

80. **Women's Political Participation:** With respect to women's political participation, 30 percent of parliamentary seats in Muthanna are held by women, highest among the three governorates. About 27.2 seats in Kerbala are held by women and 25.8 percent in Najaf.[98]

Table 17: Women in Iraqi Parliament

	Women in Iraqi Parliament (%)
Kerbala	27.2
Muthanna	30
Najaf	25.8

Source: Iraq Socio-Economic Atlas, 2019.

Women's Access to Mobile Phones: A significant proportion of women in target governorates own mobile phones, about 56 to 60 percent in Muthanna and 63 to 69 percent in Kerbala and Najaf.[99]

Table 18: Women's Ownership of Mobile Telephones

	Women who own a mobile telephone (%)
Kerbala	63 - 69
Muthanna	56 - 60
Najaf	63 - 69

Source: Iraq Socio-Economic Atlas, 2019.

[96] See Annex 8A – Report on Community Consultations
[97] Ibid.
[98] World Food Programme, *Iraq Socio-Economic Atlas*, 2019.
[99] ibid

81. **Youth:** The prevalence of youth illiteracy and unemployment is highest in Muthanna than Najaf and Kerbala. While the overall youth literacy rate in Kerbala and Najaf is between 75 to 85 percent, it is less than 75 percent in Muthanna. Likewise, the literacy for young women is less than 65 percent in Muthanna, nearly 10 percent less than that of the other two governorates (75.1 to 80 percent).[100]

The youth unemployment rate in Muthanna hovers in the range of 21 to 25 percent, whereas, the rate is somewhere between 11 to 15 percent in Kerbala and Najaf. Interestingly, young women's unemployment rate is significantly greater in Kerbala, 51 to 60 percent, than the other two governorates, 36 to 40 percent. Still, Young men's unemployment rate is considerably higher in Muthanna, 16 to 20 percent, while it is less than 10 percent in Kerbala.[101]

The Youth Development index (YDI) combines indicators from several socio-economic domains (political participation/security and freedom/communication, health, education, employment), and as per Iraq Socio-Economic Atlas's estimates, the YDI index for young men is considerably greater than YDI for young women in all three governorates (less than 0.5). Lastly, the proportion of youth who own a mobile phone is more or less the same, 40 to 43 percent, in all three target areas.[102]

Table 19: Youth Literacy Rates

	Youth Literacy Rate (%)	**Youth Literacy Rate – Female (%)**	**Youth Literacy Rate – Male (%)**
Kerbala	75.1 - 85	75.1 - 85	85.1 - 95
Muthanna	< 75	< 65	< 85
Najaf	75.1 - 85	75.1 - 85	< 85

Source: Iraq Socio-Economic Atlas, 2019.

Table 20: Youth Unemployment Rates

	Youth Unemployment Rate (%)	**Youth Unemployment Rate – Female (%)**	**Youth Unemployment Rate – Male (%)**
Kerbala	11 - 15	51 - 60	< 10
Muthanna	21 - 25	36 - 40	16 - 20
Najaf	11 - 15	36 - 40	11 - 15

Source: Iraq Socio-Economic Atlas, 2019.

Table 21: Youth Development Index

	Youth Development Index[103] for Males (0 – 1)	**Youth Development Index for Females (0 – 1)**
Kerbala	0.61 – 0.70	0.41 – 0.50
Muthanna	0.61 – 0.70	< 0.40
Najaf	0.61 – 0.70	< 0.40
National	–	–

Source: Iraq Socio-Economic Atlas, 2019.

[100] ibid
[101] World Food Programme, *Iraq Socio-Economic Atlas*, 2019.
[102] World Food Programme, *Iraq Socio-Economic Atlas*, 2019.
[103] The Youth Development index (YDI) combines indicators from the following socio-economic domains: political participation/security and freedom/communication, health, education, employment.

Table 22: Youth's Ownership of Mobile Telephones

	Youth age 15 – 24 who own a mobile phone (%)
Kerbala	40.1 - 43
Muthanna	40.1 - 43
Najaf	40.1 - 43
National	–

Source: Iraq Socio-Economic Atlas, 2019.

Priorities and Needs of Women and Men Farmers

82. In community consultations, financial assistance form the Government of Iraq was identified as the top most need of both women and men farmers across the three governorates to help expand their income-generating activities. This could be in the form of provision of modern equipment, machinery, or tools, subsidized inputs, or even loans and grants. Followed by financial support, assistance with marketing was a priority area for a substantial segment of men, as well as women-headed households in Kerbala. Some men farmers in Najaf suggested cooperation or partnerships with the government, where the farmer and government each receives a pre-determined percentage of the sales, whereas, farmers in Muthanna asked for facilitation with marketing.[104]

83. As for women farmers, a significant majority require assistance with livestock rearing and poultry farming, such as provision of high-quality feed/fodder for animals and high-quality breeds of animals. It is worth highlighting that a substantial number of women in Kerbala also asked for greenhouses, which would enable all year-round cultivation. Finally, women-headed households and key informants also recognized the importance of training and technical assistance in expanding their income-generating activity.[105]

84. Men and women in all three governorates expressed the need for state or institutional support in increasing the availability of water for farming through modern irrigation methods, reducing costs of inputs (high quality seeds, fertilizers, pesticides/insecticides), financial support for modern agricultural machinery and tools, training, and access to loans/funding and markets. Moreover, a substantial majority of men and women farmers are interested in receiving training and support on crop production, irrigation, and kitchen gardening, and mostly prefer face-to-face training over other options. Areas of crop production, irrigation water management, irrigation technology and equipment, and kitchen garden are the priority areas for farmers, irrespective of gender, followed by processing of agri-produce and marketing. Interestingly, in all three governorates, a vast majority of men showed interested in receiving information or training on marketing, but the proportion of women was nearly half or less than 50 percent, which supports the notion that most women are not actively involved in marketing of produce. Furthermore, both women and men generally favor face-to-face training sessions, with a significant proportion of men in Kerbala and women in Najaf, also open to alternatives like mass media and mobile applications.

[104] See Annex 8A – Report on Community Consultations
[105] Ibid.

85. Finally, reliable and low-cost electricity could benefit farmers by reducing production costs, particularly through powering irrigation pumps rather than diesel. Regarding the potential benefits for village/household of reliable low-cost electricity, key informants from all three governorates recognized the value of electricity to power irrigation or water pumps instead of diesel, which would significantly reduce farmers' production costs. A woman key informant from Najaf also highlighted the usefulness of electricity to store and refrigerate produce, so that consumption can be spread between harvest seasons.

Community Feedback on Climate Wise Women and Women in Water Use Associations

Climate Wise Women

86. Despite minimal prior engagement with NGOs and social programmes, women farmers are interested in seeking advice and training from a Climate Wise Woman (CWW) in their village, and many would also be interested in taking up the role. All the women farmers, across the three governorates, favored the CWW sub-component and expressed willingness to seek advice from such an individual. Majority of the women farmers showed an interest in becoming a CWW, with the highest level of interest in Kerbala (88 percent), followed by Najaf (73 percent), and then Muthanna (62 percent). Women who were not interested in becoming a CWW cited local customs and traditions, which limit women's movement and social participation, along with other commitments at home as reasons. The interest in taking up the role of CWW was considerably low among women-headed households, primarily because of busy schedules and responsibilities. A woman key informant from Muthanna pointed out that holding training sessions during summer would be a more suitable period for women to participate and adding an incentive, like a wage, could persuade male family members to give permission.[106]

    With respect to suggestions for the selection criteria of a CWW, while respondents were not particular about the age (ranging from student to middle-age), there was a strong emphasize on *relevant qualifications*, including formal education and agricultural experience, as well as the *ability to interact with others,* across the three regions. The FGDs' respondents in Muthanna suggested title of "*Trainer*" for the CWW, in Najaf, consensus was on "*Agricultural Advisor*", and the most suggested title in Kerbala was "*Creative Person*", followed by "*Trainer*" or "*Expert*."

Women's participation in Water User's Associations

87. Community consultations suggest that at present, majority of the women in the target governorates are not involved with any NGOs, support organizations, or associations, mainly because of absence of such organizations or projects, as well as local traditions and customs. Based on interviews with women-headed households and key informants, respondents were not aware of any NGOs or support organizations operating in their respective villages, other than the Water Users Association (WUA) in Muthanna. The women respondents further clarified that only men participate in WUAs and the WUA does not provide support services. Key informants were not aware of any NGOs or support organizations that were engaging local farmers (women and men) in the surveyed areas. Two key informants (women) from Najaf did recall a

[106] See Annex 8A – Report on Community Consultations

livelihoods project delivered by IOM three years ago, but, at present, there were no on-going projects they were aware of.[107]

88. Most women in Kerbala and Najaf would like women to be part of a committee on water allocation, while an overwhelming majority of men and women in Muthanna believe women should not join such associations. Considering data from FGDs, all male and female respondents in Muthanna, and nearly half of female respondents in Kerbala, were in agreement that women should not join public committees, such as water association, to uphold local social traditions and customs. They believe that decisions regarding water distribution is men's responsibility. Conversely, other female respondents and male respondents in Kerbala recognized the value and benefit of giving women membership in groups and associations that decide water allocation. Respondents noted that women play a prominent role in on-farm and off-farm activities, rearing livestock, as well as domestic work, and water is an essential component in each one.[108]

    While about half of the men in Najaf also concurred with women's representation in WUA, nearly all female respondents recognized the value of women's participation in such groups. Women in Najaf highlighted that as women are knowledgeable about local problems and involved in household and agricultural activities, particularly irrigation and livestock farming, their insights on the matter of water distribution are crucial. Moreover, some women respondents also pointed out that as women account for 50 percent of society, by default women should have representation on public forums.

[107] Ibid.
[108] Ibid.

Fund-level impacts				
M1.0 Reduced emissions through increased low-emission energy access and power generation				
A1.0 Increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions				
A2.0 Increased resilience of health and well-being, and food and water security				
A3.0 Increased resilience of intrastructure and the built environment to climate change				
Project-level outcomes				
Outcome 1: Increased water availability for women and men farmers through Improved water conveyance efficiency by investing in a closed irrigation systems and producing low carbon emission renewable energy; (ii) (iii)				
Outcome 2: Increased adoption of practices and technologies to address climate risks by men and women farmers through training to increase water use efficiency and crop water productivity, strengthened public sector extension services and enhanced awareness of climate resilient practices and training of a cadre of women as change agents for climate adaptation;				
Outcome 3: Policy environment for efficient water and energy management is enabled through incorporation of climate change adaptation into key national water and energy management policy frameworks and development of a gender sensitive climate resilient water allocation strategy and rural electrification Road Map.				
Component 1: Strengthening resilience against Climate induced water-scarcity				
Output 1.1.1.: Open canals shifted from to closed systems benefiting 8,457 people				
Activities	**Indicators and Targets**	**Timeline**	**Responsibilities**	**Budget**
Develop job description for Senior Technical Assistance on Irrigation and Drainage aspects/Project Coordinator detailing responsibility for mainstreaming gender in SRVALI	**Indicators:** List of responsibilities for mainstreaming gender in the project **Targets:** List of responsibilities for mainstreaming gender included in job description of Senior Technical Assistance on Irrigation and Drainage aspects and Project Coordinator	By year 1	FAO in consultation with MoE, MoWR and MoA	No budget implication. The gender expert (budgeted under line 114, ANNEX 4) will ensure the task.
Ensure gender sensitive design of closed canal systems through consultations with women on their use of canal water and incorporate any feature required to address their needs.	**Indicators:** Number of gender-sensitive technical designs specifying result of consultations with women and design features that will provide women with access to water (e.g. drinking water for livestock, washing of clothes) where required. **Targets:** 13 technical designs with evidence of consultation with women and design features addressing women's needs incorporated where required.	By year 1	FAO, MOWR, DOWR & Service provider contracted under competitive bidding	No budget implication. The bidding documents will include this as a clause and the gender expert (budgeted under line 114, ANNEX 4) will ensure the task.

Ensure construction of features in the closed canals identified in technical design to enable women to access canal water where required.	**Indicators:** Number of canals and water courses constructed with features identified in technical design allowing women access to canal water for their needs **Targets:** 13/ 68 km of canals and water courses constructed with features identified in technical design allowing women access to canal water for their needs	By year 4	FAO & Service provider contracted under competitive bidding, MOWR & DOWR.	No budget implication. The bidding documents will include this as a clause and the gender expert (budgeted under line 114, ANNEX 4) will ensure the task.
Output 1.2.1. Water canals covered with solar panels, providing 1,000 kW of renewable energy				
Activities	**Indicators & targets**	**Timelines**	**Responsibilities**	**Budget**
Develop gender sensitive design of canals covered with solar system The terms of reference for consulting firm will specify mandatory consultations with women and require that their interest is safeguarded in the design	**Indicators:** Number of gender- sensitive technical designs specifying result of consultations with women and design feature that will safeguard women's needs where required. **Targets:** Technical design for 1 km with evidence of consultation with women and design features addressing women's needs incorporated if required.	By year 1	FAO & Service provider contracted under competitive bidding, MOWR & DOWR.	No budget implication. The bidding documents will include this as a clause and the gender expert (budgeted under line 114, ANNEX 4) will ensure the task.
Incorporate any features required to safeguard women's needs in construction of canal covered with solar system	**Indicators:** Construction feature required to safeguard women's needs **Targets:** Construction feature required to safeguard women's needs constructed on canal covered by solar panels	By year 3	FAO & Service provider contracted under competitive bidding, MOWR & DOWR.	No budget implication. The bidding documents will include this as a clause and the gender expert (budgeted under line 114, ANNEX 4) will ensure the task.

Output 1.3.1.: 500 technical staff trained in design, installation and maintenance of irrigation, drainage and energy technologies.				
Activities	**Indicators & targets**	**Timelines**	**Responsibilities**	**Budget**
Gender-sensitive and inclusive capacity building of technical staff	**Indicators:** ToR for service provider developing capacity building program includes requirement to consult women and development of gender-sensitive capacity development plan Women consulted during needs assessment Gender issues identified and addressed in capacity building program Number of women technicians trained Percentage of women trained in climate adaptation reporting an increase in knowledge and skills **Targets:** ToR includes requirement to consult with women and address gender issues Minimum of 25 percent of persons consulted for TNA are women Capacity building programme designed with gender issues identified and addressed 125 women technicians trained.	By year 5	FAO, & Service provider contracted under competitive bidding	$54,750
Develop gender-sensitive training module and include women teachers in capacity building on solar energy in agricultural production and water saving technologies	**Indicators:** Gender aspects incorporated in module Number of women teachers trained in new module **Targets:** Module developed with gender aspects incorporated	By year 4		No budget implication. The gender expert (budgeted under line 114, ANNEX 4) will ensure the task.

	Minimum of 5 women teachers trained in new module			
Output 1.3.2. 15 WUAs supported in developing and adopting more efficient and climate sensitive water-distribution plans				
Activities	**Indicators & targets**	**Timelines**	**Responsibilities**	**Budget**
Develop gender-sensitive ToR for the Service Provider contracted by specifying the following: - Prepare a gender strategy for mainstreaming gender in the institutional and functional strengthening of WUAs based on a situational analysis of the role of women in on-farm and off-farm irrigation - Conduct gender training workshops for DOA and DOWR staff in WUA units - Hiring of gender expert for the inclusion of women in WUAs - Develop a sex-disaggregated M&E framework - Review legal framework, management rules, institutional arrangements from the gender perspective and mainstreaming gender in recommendations	**Indicators:** Steps for mainstreaming gender specified in ToR for Technical Assistance (TA) **Targets:** ToR for TA specifies requirements for mainstreaming gender	By year 1	FAO, MoWR, DoWR, DoA & Service Provider contracted under competitive bidding	No budget implication. The gender expert (budgeted under line 114, ANNEX 4) will ensure the task.
Hire a Gender Specialist to assist in mainstreaming gender in the institutional and function aspects of WUA with the following responsibilities: - Designing and conducting the study on Women in Irrigation - Identifying strategies for the inclusion of women, especially women-headed households in WUAs - Supervise mobilization of women for WUA membership and level of participation - Supervise mapping of women-headed households in the domain of each WUA - Design and delivering gender sensitization training to WUAs and relevant government staff	**Indicators:** Hiring of Gender Specialist **Targets:** Gender Specialist hired	By year 1		$39,720

Conduct a study on Women in Irrigation (On-farm and Off farm) in Karbala, Najaf and Muthanna: Situational Analysis and Strategies for Gender Mainstreaming in SRVALI This study will include the following: Situation analysis, key challenges and barriers faced by women in Irrigation, capacity building required for developing for women's effective and direct participation in WUAs, institutional arrangements required for strengthening women's role in irrigation management leadership roles for women, policies, legal framework and management rules required to facilitate women's engagement in WUAs.	**Indicators:** Study on 'Women in Irrigation and Strategies for Gender Mainstreaming in SRVALI' **Targets:** Study on 'Women in Irrigation and Strategies for Gender Mainstreaming in SRVALI' published	By Year 2		$ 20,000
Conduct gender training workshops for DoA and DoWR staff in WUA units in each Governorate These half-day workshops will present the findings of the study on Women and Irrigation in a half-day workshop to the staff of DoA and DoWR in each workshop. They will be conducted by the Gender Specialist in the DoA / DoWR office	**Indicators:** Number of Gender Orientation Workshops conducted **Targets**: 3 Gender Orientation Workshops (one per Governorate)	By year 2		$ 300 (tea and snacks)
Identify women-headed farming households' members for each of the 15 WUAs as part of the social mobilization process for establishing WUAs	**Indicators:** List of potential women headed household members for each WUA **Targets:** 15 lists of women-headed households for 15 WUAs			No budget implication. The gender expert (budgeted under line 114, ANNEX 4) will ensure the task.
Enlist women as members of WUA with inclusion of women-headed households based on information collected during social mobilization process and through giving joint membership to women from the same household as male WUA members.	**Indicators:** Number of women-headed households per WUA Number of women with joint membership per WUA Arrangements for segregated space for women in General Body/Board Meetings Percentage of women members attending GB/Board Meetings **Targets:** Minimum of 5 women-headed households per WUA	By year 2		No budget implication. The gender expert (budgeted under line 114, ANNEX 4) will ensure the task.

	supported by the project Minimum of 30 women members per WUA Minimum of 30 percent of women WUA members attend meetings			
Reinforce technical and managerial capacities of Women WUA members	**Indicators:** Number and percentage of women WUA members attending WUA training **Targets:** Minimum of 17 % of participants of WUA training / Minimum of 15 women per Governorate	By year 5		$16,650
Ensure a segregated space for women is available to enable women to attend General Body/Board meetings by making it a condition for block grant to a WUA.	**Indicators:** Availability of segregated space for women **Targets:** 15 WUAs have segregated space in place for women to attend General Body/Board Meetings	By year 2		No budget implications. The gender expert (budgeted under line 114, ANNEX 4) will ensure the task.
Component 2: Climate Resilient Agriculture Production				
Output 2.1.1.: 400 Extension Staff trained on climate resilient agricultural practices and technologies to train 10,000 farmers in adaptive practices and technologies.				
Ensure Gender sensitive technical oversight This will entail developing job descriptions specifying responsibility of technical experts Agronomist and Climate Change Adaptation Specialist/ M&E Specialist/M*E officer and accountability for mainstreaming gender in project and ensuring progress reports disaggregate findings ad lessons learnt by gender.	**Indicators** List of responsibilities for mainstreaming gender in Component 2 Findings and lessons learnt disaggregated by gender **Targets:** Job descriptions of technical experts (Agronomist and Climate Change Adaptation Specialist/ M&E Specialist/M*E officer) includes list of responsibilities and for mainstreaming gender in Component 2	Year 1	Executing Agency FAO, MoA	No budget implications. The gender expert (budgeted under line 114, ANNEX 4) will ensure the task.
Gender-sensitive mid-term and final survey	**Indicator** Percentage of women in survey sample Findings and lessons learnt disaggregated by gender	By year 6	Executing Agency FAO, MoA and Service Provider	$19800

	Targets: Minimum of 30 percent of women in survey sample for mid-term and final survey Minimum of 8 percent women-headed households in survey sample for mid-term and final survey Mid-term and final survey findings and lessons learnt disaggregated by gender		contracted under competitive bidding	
Develop training manual and materials that address the specific needs and interests of women farmers	**Indicators:** Modules and materials responding to women's needs **Targets:** Training incorporates modules and materials responding to women's needs	By year 1	Executing Agency FAO, MoA and Technical Assistance	$27,000
Train women as master trainers for Climate Resilient Agriculture	**Indicators:** Number of women Master trainers Percentage of CWW reporting increased self-confidence, knowledge, and skills in taking on leadership roles in climate adaptation and resilience **Targets:** 4 / minimum 33 % of 12 Master trainers	By year 1	Executing Agency FAO Agency & MoA	$5000
Train women extensionists to build their capacities and train farmers on Climate Resilient Agriculture	**Indicators:** Number of women extensionists trained Percentage of CWW reporting increased self-confidence, knowledge and skills in taking on leadership roles in climate adaptation and resilience **Targets:** 60 / minimum 15 percent of 400 extension staff trained	By year 1	Executing Agency FAO Agency & MoA	$28,500
Output 2.1.2: Enhanced capacity of 10,000 farmers in Climate Resilient Agriculture				
Organize FFS for women customized to suit women's specific interests in agriculture / agri-food processing accommodating their preferences in terms of frequency, duration, timing, location	**Indicators:** Number and percentage of women farmers trained in FFS Number and percentage of women-headed households among women FFS participants Percentage of women and men in CWW communities with positive perceptions of the role of CWWs in their	By year 3	Executing Agency FAO & MoA.	$18,000

	communities **Targets:** Minimum 3000 / 30 percent of 10,000 farmers minimum 330/ 11 percent of women FFS participants			
Set up project demonstration farms or plots that focus on validating the benefits of the selected Climate Resilient Agri practices and technologies addressing in particular the interests of women farmers	**Indicators:** Number and percentage of demonstration farms with a focus on CRA practices and technologies relevant for women farmers **Targets**: Minimum 120 / 30 percent of 400 demonstration farms with a focus on CRA practices and technologies relevant for women farmers	By year 4		$978,000
Output 2.1.3: 100,000 farmers reached through ICT4CC technologies				
Activities	**Indicators and Targets**	**Timeline**	**Responsibilities**	**Budget**
Conduct a gender smart rapid assessment of the use of ICT options in the Iraqi agriculture sector.	**Indicators:** Percentage of women consulted for assessment. Findings disaggregated by gender in technical report. **Targets:** 30 per cent of persons consulted. Technical report presents findings disaggregated by gender.	By year 2	Executing Agency FAO and Service Provider contracted under competitive bidding	$69,000
Develop and disseminate ICT products relevant to women farmers in the three governorates.	**Indicators:** Percentage of women farmers interviewed for the interim evaluation who accessed at least one ICT product. Percentage of women who accessed an ICT product and considered it relevant to their needs. **Targets:**	By year 5	Executing Agency FAO and Service Provider contracted under competitive bidding	

	The project ICT4CC action plan specifies strategies for targeting women farmers through ICT products 25 percent of women farmers interviewed for the interim evaluation accessed at least one ICT product 70 percent of women who accessed an ICT product considered it relevant to their needs			
Output 2.2.1: Technical Capacities of 90 stakeholders and knowledge of 12,000 citizens on solar energy increased through trainings and awareness raising events				
Organize participation of women, including extensionists and other stakeholders on training in Solar Powered Irrigation systems (SPIS).	**Indicators:** Percentage of women participants Number and percentage and of women participants of SPIS training **Targets:** Minimum of 30 percent of participants of training on SPIS 27 / 30 percent of participants of SPIS training		Executing Agency FAO and MoA	$28,400
Awareness-raising for women on solar energy through participation in open energy days	**Indicators:** Identification of delivery channels for informing women about ‘open energy days’ Gender inclusive awareness raising material Number and Percentage of women participating in Open Energy days **Targets:** Delivery channels for informing women about ‘open energy days’ identified in communication plan			$25,100

	Awareness raising material printed is gender inclusive 3600 / 30 percent of participants of open energy days			
Output 2.3.1.: A cadre of Climate Wise Women (CWW) trained as change agents for climate adaptation				
Activities	**Indicators & targets**	**Timelines**	**Responsibilities**	**Budget**
Ensure gender-sensitive technical assistance for Climate Wise Women (CWW) sub-component. Hiring of: 1. National Consultant on Gender and Social Inclusion 2. International Consultant/Expert on Gender and Climate Adaptive Agriculture	**Indicators:** Hiring of National and International Specialists **Targets:** National and International Specialists are hired	By year 2	Executing Agency FAO with Technical Assistance, MoA/DoA	$506,894
Develop Social and Behaviour Change Communication Strategy for CWW	**Indicators:** Hiring of SBCC Specialist Hiring of third-party service provider/media company to design and print SBCC material Social and Behaviour Change Communication Strategy for CWW **Targets:** SBCC Specialist hired Production of designed SBCC material (brochures, posters, badges, social media campaign) Social and Behaviour Change Communication Strategy produced	By year 2		$29,128
Design of Training Modules for Master Trainers and CWW	**Indicators:** Training Needs Assessment Number of Peer Review Workshops with agricultural extension staff Field testing of CWW Training Modules	By year 2		$46,000

	Number of Validation workshops Design and printing of training material **Targets:** One Training Needs Assessment completed 6 Peer Review Workshops, each workshop 2 days long 1 field testing workshop (5 days) 1 Validation Workshop Translated and printed material			
Provide Training to Master Trainers (Sessions will be held at times and locations that are safe and convenient for women and childcare will be provided. Childcare will be provided during these trainings.)	**Indicators:** Number of Master Trainers Number of trainer kits **Targets:** 7 Training workshops 15 Master Trainers trained	By year 2	Executing Agency FAO with Technical Assistance, MoA/DoA	$102,500
Select and train CWW (Sessions will be held at times and locations that are safe and convenient for women and childcare will be provided. Childcare will be provided during these trainings.)	**Indicators:** Number of field visits for social mobilization to spread awareness about CWW in target areas Selection of CWW Training of CWW Number of training kits provided to CWW **Targets:** 12 field days per Master Trainer (15 trainers) for social mobilization and raising awareness 50 CWW selected per governorate	By year 4		$585,804

	12 workshops per batch of 25 CWW (2 batches in each governorate) 150 Training Kits provided to CWWs			
Design and conduct study on 'Women & Climate Change: Impact, Challenges and Coping Strategies in Kerbala, Muthanna and Najaf' This study will be designed by the International and National Gender Specialist for Climate Adaptive Agriculture & Gender. It will be conducted through the CWW and capture women's experience with climate change at the grassroots in addition to the impact of CWWs.	**Indicator:** Study on 'Women & Climate Change: Impact, Challenges and Coping Strategies in Kerbala, Muthanna and Najaf' **Target:** Study on 'Women & Climate Change: Impact, Challenges and Coping Strategies in Kerbala, Muthanna and Najaf' completed			No budget implication. The gender expert (budgeted under line 114, ANNEX 4) with the support of the M7E unit of of the project will ensure the task.
Output 2.3.2. 40,500 women sensitized for climate adaptive measures.				
Activities	**Indicators & targets**	**Timelines**	**Responsibilities**	**Budget**
Disseminate climate resilient practices through CWW	**Indicators:** Number of Community dialogues Number of home visits Number of monitoring meetings with CWW by Master Trainers **Targets:** 27000 Community dialogues conducted by CWW 9000 House visits conducted by CWW One monthly monitoring meeting conducted by Master Trainers (10 CWW per trainer) and attended by CWW	Year 3 to 5		$472,050
Organize multi-stakeholder CWW Forums	**Indicators:** Number of CWW forums organized **Targets:** One CWW forum per year for 3 years	Year 3 to 5	FAO with Service Provider contracted under competitive bidding, MoA/DoA	$30,000

Component 3: Scaling-up climate adaptation through policy formulation and planning				
Output 3.1.1.: A climate resilient water allocation strategy and its action/legal/coordination plan developed				
Activities	**Indicators & Targets**	**Timelines**	**Responsibilities**	**Budget**
Hire a Gender Specialist to assist in mainstreaming gender in Climate Resilient Water Allocation Strategy	**Indicators:** Recruitment of Gender Specialist **Targets:** Gender Specialist Recruited		FAO, Ministry of Health and Environment MoE, MoWR and MoA	$ 113,000 .
Develop a Gender Smart Climate Resilient Water Allocation Strategy	**Indicators:** ToR of TA specifies requirement for identifying gender issues in desk research, gender inclusive consultations and drafting a climate resilient water allocation strategy which identifies and addresses gender issues. Percentage of women consulted during field research Session on gender issues in multi-stakeholder workshops Gender Issues identified and addressed in gender smart climate resilient water allocation strategy **Targets:** ToR of TA specifies requirement for identifying gender issues in desk research, gender inclusive consultations and drafting a climate resilient water allocation strategy which identifies and addresses gender issues. 25 percent women of persons consulted during field research Session on gender issues held in each multi-stakeholder workshops Gender Issues identified and addressed in Gender smart Climate Resilient Water Allocation strategy document			

Output 3.1.2. Improved national compliance practices for management of irrigation water supply				
Incorporate women water users perspectives in identifying and establishing improved national compliance practices for management of irrigation water supply	**Indicator:** Identification of gender issues and strategies to address bottlenecks and establish new service-delivery performance targets for women water users **Target:** Gender issues and strategies to address bottlenecks and establish new service-delivery performance targets for women water users identified and addressed in action plan		FAO, Ministry of Health and Environment MoE, MoWR and MoA	$71,000
Ensure representation of women in knowledge exchange visits on managing and maintain irrigation water supply and drainage	**Indicator:** Number and percentage of women on knowledge exchange visits/webinars **Targets:** 30/ 30 percent of 100 participants webinars Minimum of 7/30 percent of participants of knowledge exchange visits			$ 72,600
Output 3.2.1. Enhanced planning for solar rural electrification				
Activities	**Indicators & Targets**	**Timelines**	**Responsibilities**	**Budget**
Develop ToRs for national policy expert and national energy expert specifying requirement for developing a gender sensitive solar rural electrification plan	**Indicators:** Requirement for identifying gender issues and strategies in ToR of National Policy and National Energy Expert **Targets:** ToRs of national policy expert and national energy include requirement for identifying gender issues and strategies		FAO, Ministry of Health and Environment MoE, MoWR and MoA	No budget implication

Develop a gender-sensitive Road Map for solar rural electrification	**Indicators:** Gender issues and strategies identified **Targets:** Road Map for solar rural electrification highlights gender issues and specifies any strategies required for addressing them			
Project Management Unit				
Activities	**Indicators & Targets**	**Timelines**	**Responsibilities**	**Budget**
Conduct Workshop on Gender & Sexual Harassment Prevention	**Indicator:** **Workshop on Gender & Anti-Sexual Harassment** **Target:** **One workshop on Gender & Anti-Sexual Harassment**	By year 1	FAO	$2,400
Conduct Communication Campaign on Climate Change and Women The objective of this communication campaign will be to highlight the role of women in climate change and their leadership potential through disseminating the studies on Women in Irrigation. 'Women & Climate Change: Impact, Challenges and Coping Strategies in Kerbala, Muthanna and Najaf'. The studies will be disseminated and discussed at the Climate Wise Women Forums and in Universities of Agriculture in the three target Governorates.	**Indicator:** Number of copies of studies on Women in Irrigation & 'Women & Climate Change Women and Climate Change Events **Target:** 1000 copies disseminated of studies on Women in Irrigation & 'Women & Climate Change 3 Women and Climate Change Events	By year		$12,000
Conduct Gender Inclusive Communication Campaigns Communication campaigns conducted by the project will ensure that women and men are targeted equally and that messages, media and delivery channels used are gender inclusive	**Indicator** Gender inclusion strategies **Target** Gender inclusion strategies listed in 5 communication campaign plans			$30,000