ADAPTATION FUND

REQUEST FOR PROJECT/PROGRAMME FUNDING FROM THE ADAPTATION FUND

The annexed form should be completed and transmitted to the Adaptation Fund Board Secretariat by email or fax.

Please type in the responses using the template provided. The instructions attached to the form provide guidance to filling out the template.

Please note that a project/programme must be fully prepared (i.e., fully appraised for feasibility) when the request is submitted. The final project/programme document resulting from the appraisal process should be attached to this request for funding.

Complete documentation should be sent to:

The Adaptation Fund Board Secretariat
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ADAPTATION FUND

PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

PART I: PROJECT/PROGRAMME INFORMATION

Project/Programme Category:	Regular
Country:	Iraq
Title of Project/Programme:	Building Resilience of the Agriculture Sector to Climate Change in Iraq (BRAC)
Type of Implementing Entity:	Multilateral Institution
Implementing Entity:	IFAD
Executing Entities:	Ministry of Agriculture; Ministry of Health and Environment
Amount of Financing Requested:	9,999,660 U.S Dollars

I. Project / Programme Background and Context:

Provide brief information on the problem the proposed project/programme is aiming to solve. Outline the economic social, development and environmental context in which the project would operate.

1. Project Context

1.1. Environmental context

Iraq has a territory of about 435,052 km, that extends between latitudes 29º5' and 37º22' north, and between longitudes 38º45' and 48º45' east. Iraq can be divided in four zones: (i) the Mesopotamian alluvial plain that occupies a quarter of the area of the country. equivalent to 132,500 km2; (ii) the desert plateau located in the west of Iraq, occupying about less than half the size of Iraq or 168,552 km2; (iii) the mountainous region located in the northern and north-eastern parts of the country, covering about 92,000 km2; (iv) and the undulating region, a transition zone between the low-lying Mesopotamian plain in the south and the high mountains in the far north and north-eastern areas, that covers 67,000 km2.

The climate of Iraq is continental and subtropical. Winters are usually cool to cold, with an average daily temperature that might reach 16ºC dropping at night to 2ºC. Summers are dry and hot to extremely hot, with a shade temperature of over 43ºC during July and

August, yet dropping at night to 26ºC. Most of the rainfall falls during winter, spring and autumn, and is non-existent in the summer period. Average annual rainfall is 154 mm, and it ranges from less than 100 mm over 60 % of the country in the south up to 1,200 mm in the north-east mountains[1].

Figure 1. Seasonal mean precipitation (Period 1970-2000) (top left: winter; top right: spring; bottom left: summer; bottom right: autumn)[2].

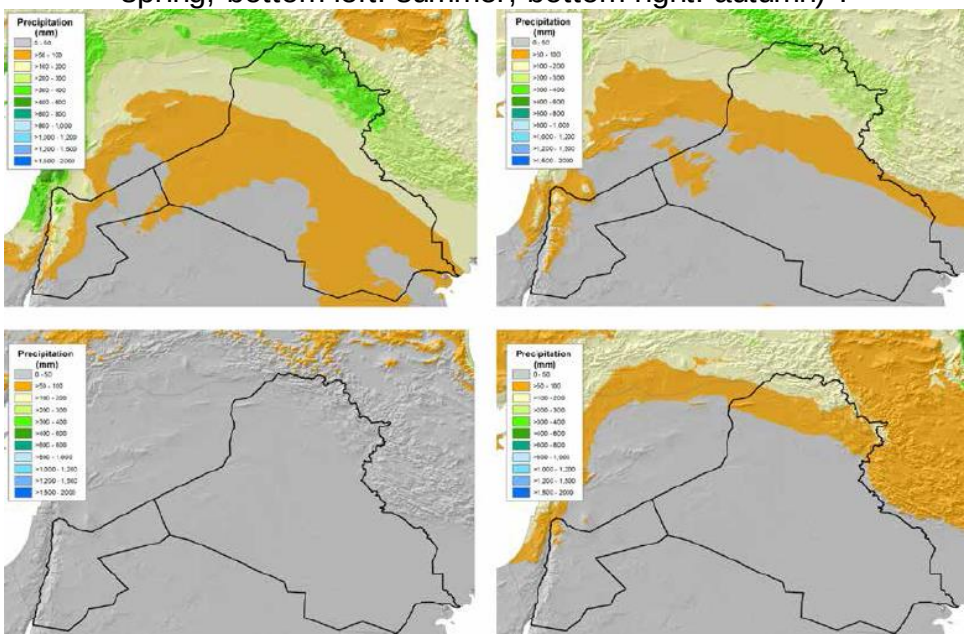
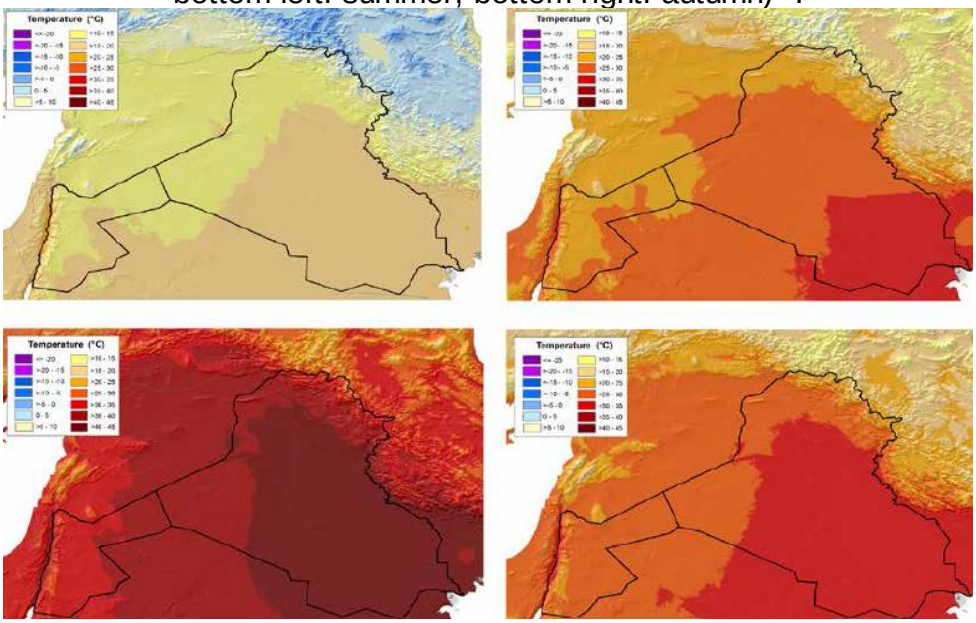


Figure 2. Seasonal mean maximum temperature (top left: winter; top right: spring; bottom left: summer; bottom right: autumn) [3].



[1] 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, Nº 12 (Serial Nº 73).
[2] De Pauw, E. et al (2015) Mapping climate change in Iraq and Jordan. ICARDA Working Paper 27.
[3] De Pauw, E. et al (2015) Mapping climate change in Iraq and Jordan. ICARDA Working Paper 27.

The rivers Tigris and Euphrates with their tributaries form the main surface resources in Iraq. The catchments area of these rivers is shared by five countries: Iraq, Turkey, Iran, Syria and Saudi Arabia. Generally, the total annual flow of the Tigris and Euphrates rivers greatly fluctuates from year to year due to changing metrological conditions. The period extending from October to February is referred to as variable flood period where discharges in both rivers fluctuate depending on intensity and duration of rainfall at their basins. This period is usually followed by what is known as steady flood period extending from March to April.

The southern part of Thi Qar and Miysan governorates are home to the Mesopotamian Marshlands or al-Ahwar located in the southern part of the country. The area is a rare wetland within a desert landscape. It hosts a freshwater ecosystem and provides a habitat for wildlife, hosting several species of birds and fish. The Ma'dan or Marsh Arabs inhabited the marshlands of Southern Iraq for centuries, living in reed houses and practicing traditional methods of agriculture, fishing and water buffalo breeding. Women are in the forefront in the marshlands, and actively participate in dairy and fish marketing. Until the 1970s, the marshlands used to cover an area of up to 20,000 km2 around the confluence of the Tigris and Euphrates rivers. The marshlands were partially drained in the 1970s and 1980s to clear land for oil exploration. After the 1991 Shiite uprising, the Ba'athist regime constructed a series of dams and canals aiming to drain the marshes. By the time of the 2003 invasion, 90% of the marshland had disappeared. The draining also increased the level of salt in both the soil and the water in the area. Owing to initiatives by the inhabitants with the reopening of waterways, and, to good rainy seasons, the unique marshland environment is slowly being brought back to life. The site was recently declared a UNESCO World Heritage site. The partial restoration of the Mesopotamian marshes has been heralded as one of the few success stories to emerge from Iraq's chaos.

1.2. Socio-economic context

Iraq is an oil-rich upper middle-income country in the region with a population of 36.0 million growing at 3% per year and of which 33% are rural. It is estimated that the population will rise to 40.4 million by 2025. The per capita gross national income (GNI) amounted to USD 5,550 in 2015 corresponding to a purchasing power price (PPP) of USD 14,850. The agriculture sector accounts for 8.6% of Gross Domestic Product (GDP) including the oil sector, and 32% without the oil sector. Economic growth has averaged 7.1% per year over the past five years, and it is projected to grow at 7.2% in 2016 and at around 5% in the next few years. This is driven by the projected ramp-up in oil production, increase in oil-related FDI, structural reforms and implementation of the IMF program. However, conflict, and excessive dependence on oil pose significant challenges to Iraq's socio-economic development. Iraq was ranked 141 out of 187 countries in the 2015 Human Development Index. Unemployment rate is 11% nationally (7% of males and 13% of females). Around 653,000 people are unemployed, of which 496,000 are male and 157,000 are female. Youth (15-24 years) unemployment is high at 18% (27% of females and 17% of males). The renewal of civil unrest in 2013 has

displaced some 1.1 million Iraqis or made them refugees, and created a population of concern of 1.5 million. The loss of homes and businesses in the conflict is considerable.

Iraq has been identified as a country with extreme fragility by IFAD (included in the list of countries with most fragile situations), peer organizations and IFIs (World Bank) and international assessments (in the 'high alert' category in the Fund for Peace Index, which forms the basis for OECD's assessment of fragility). Fragility affects rural development significantly, reducing institutional capacity and service delivery. For Iraq, this fragility is complex, subnational and multi-dimensional mainly stemming from weak institutional capacities and structures for good governance. Volatile and transboundary security with associated risks are not very conducive to private sector investment for reconstruction, inclusive economic growth and job creation.

Rural poverty. In 2012, rural poverty rate stood at 31 %, nearly the double of the urban poverty one (15 %) with 19% cumulative poor people in Iraq living below the national poverty line of less than 2.2 US$ per person per day. About 54% of the labour force is rural and the rural population is more adversely affected by Illiteracy (25%) than the urban population (14%). The average rural household size is 9.25 persons. Rural poverty in Iraq is a direct consequence of the rapid 3% population growth, internal conflict and insecurity, climate change, increasing water scarcity and rapid desertification. The combined effects resulted in reduced prospects for viable rainfed and irrigated agricultural and livestock production, and lack of sustainable income-generating opportunities for rural communities.

At the regional level, and out of the 18 Governorates in Iraq, the poverty ratio ranged from 35% to 52% for the 5 poorest governorates, from 11% and 26% for 9 governorates and from 2% to 10% for the remaining 4 governorates. In the rural areas of the 5 poorest governorates, small-scale farmers and livestock producers are the most marginalized households with unemployed young men and women members as the most vulnerable.

Small-scale farmers with a holding size ranging from 2.5 to 7.5 ha account for 35% of total number of farmers with subsistence cereal crops accounting for 58 % of their cultivated area. Medium size farmers account for 34% with a holding size ranging between 7.6 and 12.5 ha

Livelihoods and nutrition. Given the current low crop and livestock productivity, agriculture is no longer the major source of livelihood for smallholder farmers. The nutrition status of both rural and urban population is increasingly dependent on the heavily subsidized "food basket" provided by the Iraqi Public Distribution system (TDS) which is an essential policy measure to ensure food security and avoid possible malnutrition. However, the subsidized food rationing on a national scale with imported food has had a negative impact on the local grain market with consequent depressing effects on producer prices and on agriculture sector investment.

Gender. Women in Iraq are represented in the higher levels of the public sector and government. In 2010, the average rate of parliament seats held by women was 27%. The rural unemployment rate is higher for females than males. Only 18% of

women are employed and they take up only 7% of employment in non-agricultural sectors. The percentage of women in paid employment in the non-agricultural sector has risen from 12.1% in 2008 to 14.7% in 2011. Within rural areas, the literacy divide between men and women is wider. Traditional societal views of women, insecurity and weak performance of state functions are affecting the role of Iraqi women in rebuilding the country.

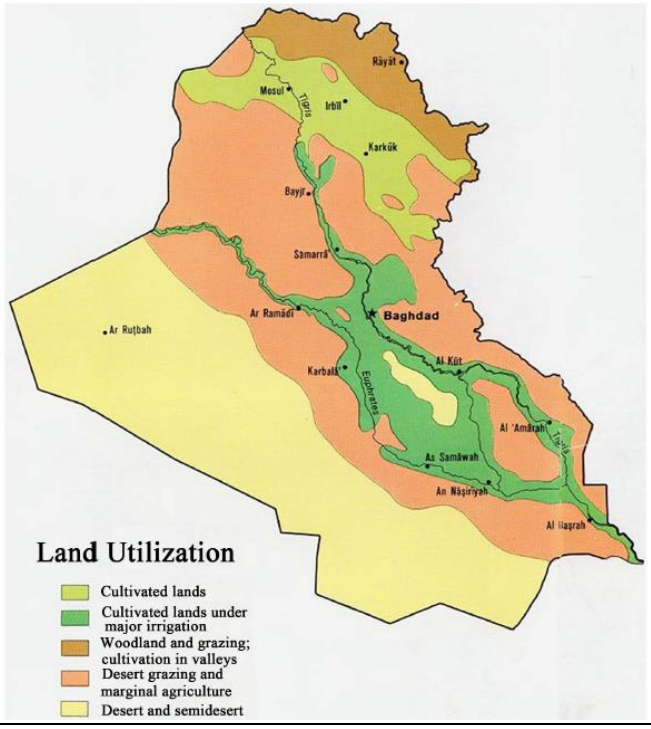
1.2.1. Agriculture context

Agricultural systems and productivity. Iraq is an agriculture country and has knowledge and expertise. Agriculture is practiced from North to South in eight agro-ecological zones (ACZs). The production systems include an irrigated-based system in the Center and South and a rainfed-based system predominantly in the North. In the irrigated system, in addition to cereals, winter and summer vegetables, corn, rice and fruit trees with predominantly date palm are grown. The rainfed farming system is crop/small ruminant based. In both systems the productivity is low.

The reasons for diminishing productivity for crop and livestock are: (i) use of traditional and low yielding production technologies including mono-cropping and cereals-fallow rotation; (ii) lack of enabling agriculture input and output price policy - the prices of seeds, fertilizers, pesticides, veterinary drugs and agriculture machinery and equipment are very high for local producers to compete, without incentives, with the heavily subsidized imported food items available in the local market; (iii) weak agriculture extension services for technology transfer particularly to small producers; and (iv) limited access to rural financial services.

Figure 3. Land utilization in Iraq[4].

[4] Food and Agriculture Organization (FAO) (2005) Country Profile: Land Use and Water Resources. http://www.fao.org/ag/agp/AGPC/doc/Counprof/Iraq/Iraq.html



Agricultural area. The total agricultural area of variable quality and potential, amounts to 11 million ha of which 6 million are actually cultivated with 2,5 million ha under rainfed in the North and 3,5 million ha under irrigation in the Center and the South. About 0.3 million ha are irrigated from surface water and the rest from underground aquifers. Of the total land cultivated, the cereal crop group is preponderant (53.5%), and from these wheat (19.4%), barley (31.6%), and maize (1.1%). From these main crops there is a dynamic upward trend for wheat and maize crops, along with a decrease in barley[5]. Livestock during 1990-2011 presents a sharp decline from 10.06 LSU/ha in 1990 to 6.05 LSU/ha in 2011, when it represents only 60.10 % from the livestock. The main decrease is found in poultry from 8.67 LSU/ha in 1990 to 2.77 LSU/ha in 2000, to 4.14 LSU in 2010 and to 4.63 LSU in 2011. The main reason is the massive importation of poultry, favored by the political events that took place in Iraq[6].

Table 1. The crop structure in Iraq during the period 1990-2012[7]

[5] Yousif, M.D. et al (2015) The agriculture potential development in the Republic of Iraq. Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, Vol. 15, Issue 4.
[6] Yousif, M.D. et al (2015) The agriculture potential development in the Republic of Iraq. Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, Vol. 15, Issue 4.
[7] FAO http://faostat3.fao.org

Specification	1990		2000		2010		2012	
	thousand hectares	%	thousand hectares	%	thousand hectares	%	thousand hectares	%
Wheat	1,180.6	22.6	1,200.0	27.9	1,383.3	32.9	1,200.0	28.5
Barley	1,922.1	36.8	1,110.0	25.8	1,005.8	23.9	600.0	14.3
Corn	69.3	1.3	72.8	1.7	113.1	2.7	130.0	3.1
Dates	123.5	2.4	110.0	2.6	123.0	2.9	124.6	3.0
Fresh vegetables	29.0	0.6	30.0	0.7	18.6	0.4	22.0	0.5
Vita de vie	18.8	0.4	13.0	0.3	10.0	0.2	11.0	0.3
Total main crops	3,355.4	64.2	2,549.3	59.3	2,683.5	63.7	2,122.7	50.4
Other cultures (pastures, meadows)	1,874.6	35.8	1,750.7	40.7	1,526.5	36.3	2087.3	49.6
Total (ha)	5,230.0	100.0	4,300.0	100.0	4,210.0	100.0	4,210.0	100.0
1990 (%)	*100.0*	*X*	*82.2*	*X*	*80.5*	*X*	*80.5*	*X*

Table 2. The structure of animal load per cultivated hectare in Iraq during 1990-2011[8]

Specification	1990		2000		2010		2011	
	UVM	%	UVM	%	UVM	%	UVM	%
Cattle	0.18	*1.8*	0.18	*4.48*	0.23	*4.13*	0.23	*3.83*
Sheep and goats	1.21	*12*	0.99	*25.1*	1.16	*21*	1.19	*19.65*
Poultry	8.67	*86.2*	2.77	*70.4*	4.14	*74.9*	4.63	*76.52*
Total	10.06	*100*	3.94	*100*	5.53	*100*	6.05	*100*
	100.0	***x***	***39.2***	***X***	***55.0***	***x***	***60.1***	***x***

Over 75% of irrigated land is affected by salinity. Agriculture accounts for 76% of total water use. The non-water saving surface irrigation system is practiced in 95% of irrigated areas and crop intensity does not exceed 85% of cultivated land. Water use efficiency both at the conveyance level and on farm is low and ranges from 35% to 40%.

Water resources. Increasing water scarcity and reduced water availability are dominant economic and environmental challenges in Iraq. Current water use for all purposes far exceeds renewable supplies. The average yearly inflow of the Euphrates declined from 30.44 billion m^3 for the period 1933-1971 to 12.75 billion m^3 (42%) for the period 2008-11. For the Tigris, the inflow declined from 49.22 billion m^3 for the period 1933-98 to 33.11 billion m^3 (67%) for the period 1999-2011. The decline in the inflow is due to over exploitation, climate change and the Ataturk Dam in Turkey. The annual share of renewable fresh water resources per capita in Iraq declined from 4,587 m^3 in 1964 to 998 m^3 in 2014. The quality of irrigation water is deteriorating in terms of salinity and chemical contaminants.

Irrigation infrastructure. This includes: (i) a wide range of hydraulic dams and water reservoirs for a cumulative retention capacity of 70 billion m^3; (ii) 45,000 km of water conveyance systems and 85,000 km of drainage canals; and (iii) 38,000 pumping and control stations for irrigation and drainage. Most of the conveyance canals is in state of disrepair as a result of poor maintenance and most of the drainage canals are non-functional due their lack of cleaning.

1.3. Policy, Governance and Institutional Issues

Iraq is in the middle of a triple political, security and socio-economic transition. The overall constraints relate to inadequate policies and weak institutions for good political and socio- economic governance. According to a 2014 report by the Centre for Strategic and International Studies (CSIS) on Iraq's economic and governance crisis, fundamental

[8] FAO http://faostat3.fao.org

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.

Policy and Institutional issues relevant to the agriculture sector. The Government has formulated a 2013-2017 National Development Plan (NDP) designed to enable the Iraqi economy to take off and start to free itself from a revenue-generating economy dependent on a single resource, oil, to expanding its base to depend on other activities, whether production, service, or distributional. The plan defined the roles of the public and private sectors and civil society in achieving its developmental, economic, human resource, and environmental goals. The vision embodied in the 2013-2017 Plan represents 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. The Federal budget will correspond with the plan's goals as part of comprehensive and balanced policies to realize the following goals: achieving fiscal and monetary stability; developing the primary and secondary spatial poles in order to close the gap between urban areas and the countryside as well as between governorates; guaranteeing equal opportunities on the basis of gender so as to boost economic participation rates; fostering knowledge and skills to keep pace with the demands of the knowledge economy and the job market; guaranteeing integrated health care for both the sick and the healthy; raising the level of quality social care to cover the needs of vulnerable groups in order to enhance social development opportunities; and achieving environmental sustainability and thereby laying the groundwork for the green economy.

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 programmes are relevant to IFAD engagement and pose 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 program 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 programmes listed above 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.

The Ministry of Agriculture has been compiling ideas for enticing young unemployed and underemployed Iraqis into agriculture. On this list feature items such as the maintenance of agricultural machinery, nurseries for high value plants, and feed blocks for livestock. There may also be a possibility of collaborating with the National Council for Seeds to start private seed out-grower operations in high potential agricultural areas.

The Ministry of Water Resources (MWR) is in charge of water management – assessment, water allocation per sector, monitoring, supply and supervision of irrigation and drainage projects - in Iraq. The Iraqi Water Law Nº 50 of 2008 is the main piece of legislation concerning water management and use. It declares water a publicly owned good that can only be exploited after procurement of a license, defining the amount and duration of use rights, from the Water Authority. The law sets the order of priority for water exploitation and defines the pathways to define, develop, grow, and utilize water resources in Iraq. The law also details other aspects of water regulation, including ownership, management responsibilities, licensing, resource preservation from pollution, and trans-boundary water resource management. MWR developed in 2010 a comprehensive strategy "Strategic study of water resources and land" setting objectives and plans for 2035 for the sustainable use and integrated management of these resources, including updated priorities for infrastructures and sectors using water. The MWR is supporting the establishment of water users' associations in the agriculture sector in order to enhance the experience of field irrigation management methods, and raise awareness and promote water use rationalization.

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 at short, medium and long term, enhance capacities of government and smallholder organisations, as well as identify policy gaps that need to be addressed to help increase competitiveness of the sector and enhance its contribution to rural development and poverty alleviation.

Iraq's Social Protection Net (SPN) is a cash transfer program that aims to target poor and vulnerable populations. The SPN distributes monthly grants to beneficiaries based on household size. The program is inefficient and fragmented, providing cash transfers based on categorical targeting (including households with orphans, married students, widows, divorced women, and others), leading to significant leaks (GoI 2012). To remedy the problems associated with the SPN, a new poverty targeting initiative was launched in April 2016 to introduce proxy means testing (PMT). The initiative is administered by the Social Protection Commission, which was created in 2014 (World Bank 2017). Both the Commission and PMT are for the time being in their very early stages, and IFAD should try to remain abreast of developments as they may have direct implications for our country programme.

The Law of Environmental Protection and Improvement Nº 27 of 2009 has organized the technical and legal framework of the Ministry of Health and Environment (MHE), by including provisions for the protection of human, environment and biodiversity from water, air and soil pollution. There are other provisions related to organizing environmental control, sanctions for polluting activities and compensation for damages. MHE is seeking through the Centre of Climate Change to develop a national strategy for adaptation to the climate change impacts.

The Iraqi Government has a clear vision of the importance of work with the International Community to reduce the impacts of climate change. It ratified the UNFCCC and Kyoto Protocol in 2009. Iraq became a member of the UNCCD in 2009, with a first national report submitted in 2014. The framework of the National Strategic Plan for Combating Desertification (NSPCD) and the National Biodiversity Strategy and Action Plan (NBSAP) have established a national coordination mechanism, supported by the Ministries of Health and Environment, Agriculture, and Water Resources.

Research and extension. Most of agriculture research assets (buildings, labs and farms) have been damaged. Technicians are not insufficient 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.

The National Council of Seeds determines the political guidelines and "Alemraaqbih", performed by agricultural research institutes such as the Institute of Agricultural Research (IPARC), State Council for Agricultural Research (SBAR) and Agricultural Research Centre (ABRC)[9]. Commercial seed producers are verified and selected by the *State Council for Examination and Certification of Seeds (SBSTC*), having a permanent collaboration with companies producing and marketing of seeds. Agricultural Research Institute (IPARC) is responsible for the improvement and development of new varieties of agricultural crops, such as cereals (barley, wheat, rice and maize), legumes (lentils, chickpeas and beans), but also of industrial plants (nuts, soya, sunflower). State Council for Agricultural Research (SBARC) is responsible for grain, vegetables, and cotton. The Centre for Agricultural and Biological Research (ABRC) pursues the development of varieties of cereals and industrial plants. Agricultural colleges play a less important role in the amplification of seeds quantities

Farmers' organizations. The authority of traditional farmer organizations (WUAs, Cooperatives, farmer associations…) has been eroded by the unrest of the last two decades, and the various land reforms that fragmented ownership including tenure reform associated with irrigation development. Institutional support is needed to ensure that these groups regain their role and contribute to the development of the agricultural sector.

Private sector. 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 and closing businesses, license requirements, limited communication infrastructure and logistics, difficult access to finance and a non-competitive business environment lacking transparent and clear legal

[9] Yousif, M.D. et al (2015) The agriculture potential development in the Republic of Iraq. Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, Vol. 15, Issue 4.

frameworks for rules-based-market competition. However, the new vision developed for the agricultural sector represents 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 project will be supporting this sector in capacity development activities so that they could become solid future partners. In the project inception phase, a mapping of private sector partners will be undertaken, including a matching exercise of their potential level of involvement in the project activities.

2. Threats to agriculture development

2.1. Policy and market drivers

Inefficient price and subsidy policies manifested by depressed producer prices and non-transparent markets as a result of the heavy subsidy for imported food items. Limited access of smallholder farmers to remunerative market prices, rural financial services and affordable investment loans, performing extension services and incentives for the adoption of new technologies. High input prices - seed, fertilizer, pesticides, veterinary drugs and vaccines, fuel, farm machinery and labour.

2.2. Unsustainable Environmental and Natural resource management

Iraq's environmental conditions have suffered greatly from the impact of poor policies on pollution and resource management. The years of conflict left chemical pollution affecting the livelihoods and safety of an estimated 1.6 million Iraqis. The natural resources for agriculture use, namely land, water, forest and pasture have been inefficiently and unsustainably managed with underground water resources overly exploited beyond their recharge capacity. The percentage of dried Mesopotamian marshlands is now 90%. This resulted in increasing threats of land degradation, desertification, water shortage, increased soil and water salinity, low irrigation efficiency, reduced soil fertility and low forest cover of 4.0%.

Iraq was considered rich in its water resources compared with other countries where the annual allocation per capita reached 6029 m3 in 1995 and 2100 m3 in 2015[10]. Construction of dams on the Tigris and Euphrates and their tributaries outside the border of Iraq, and the growing demand for water in Turkey and Syria will lead to dry up the Tigris and Euphrates Rivers in 2040. Furthermore, the supply will be 43 and 17.61 BCM in 2015 and 2025 respectively while current demand is estimated between 66.8 to 77 BCM. These suggest that the Iraqi government needs to take quick, prudent and firm action as a high priority. To overcome these problems in Iraq, there is a great need for prudent management of water resources and the adaptation of nonconventional techniques to augment water resources.

[10] Al-Ansari, N. et al (2014) Present conditions and future challenges of water resources problems in Iraq. Journal of Water Resource and Protection, 2014, 6.

Decreasing water supplies have been exacerbated by drought conditions between 2005 and 2009, which have devastated agriculture and caused drinking water shortages, particularly in rural areas. 39% of cropland suffered a reduction in coverage for two years in succession between 2007 and 2009, and livestock has been decimated[11]. The Tigris and the Euphrates, Iraq's two major surface water sources, may dry up by 2040 if current conditions prevail.

Diminishing water availability, increased water salinity and low irrigation efficiency. About 75% of the irrigated area of 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. Over 39% of Iraq's agricultural land suffered a reduction in cropland between 2007 and 2009. 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.

One of the most serious effects of the excessive use of chemical fertilizers is their infiltration into underground waters, contributing to enhance the process of eutrophication of water courses, along with the existence of a process of salting the soil. Another phenomenon produced in Iraq due to the overuse of chemical fertilizers is the proliferation of diseases and parasites, whose development is more on excessively fattened crops with nitrogen. Effect of applying those fertilizers was looked into Iraq's agriculture through knowledge of quantities consumed of nitrogen (N) and phosphorus (P), expressed as the total amounts of nutrients active substance (s)[12].

Table 3. Evolution of fertilizers' quantities in agriculture in Iraq during the period 2004-2011[13]

Specification	UM	2004	2006	2008	2009	2010	2011
Nitrogen fertilizers	thousands to a.s. N	102 .7	167.0	164.1	171.8	108.0	138.3
	%	*100.0*	*162.6*	*159.8*	*167.3*	*105.1*	*134.7*
Fertilizer with phosphorus	thousands to a.s P2O5	6.9	55.0	63.6	46.4	24.4	24.4
		100.0	*795.0*	*919.9*	*670.3*	*352.4*	*352.4*
Fertilizer with potassium	thousands to a.s. K2O	…	…	…	46.4	4.8	5.4
					100.0	*10.4*	*11.6*

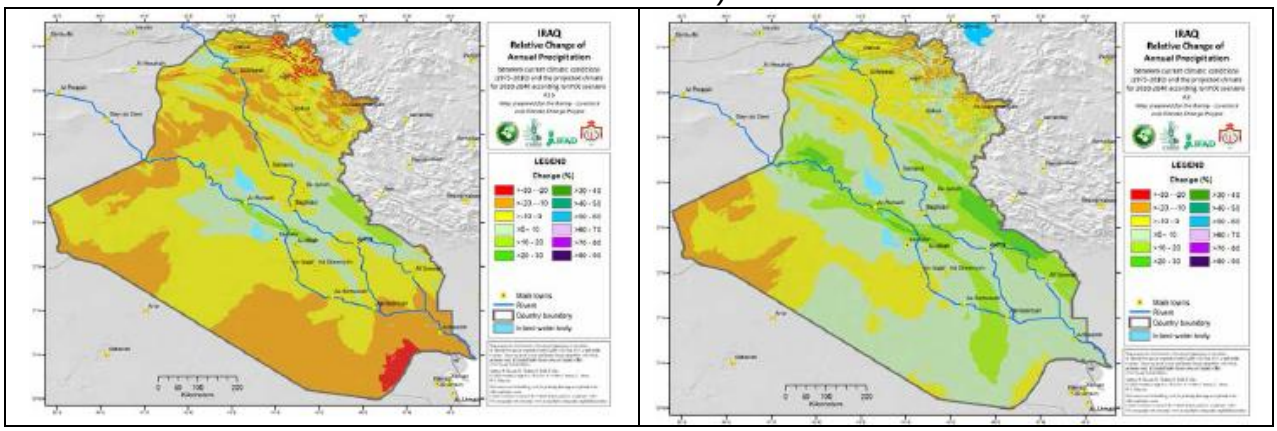
2.3. Climate change

The Arab Forum for Environment and Development (AFED) in 2009 reported that the MENA countries - which already suffers from aridity, recurrent drought and water scarcity - are in many ways among the most vulnerable in the world to the potential impacts of climate change, mostly the increased average temperatures, less and more erratic precipitation and sea level rise. Five MENA countries including Kuwait (52.6ºC), Iraq (52ºC), Saudi Arabia (52ºC), Qatar (50.4ºC) and Sudan (49.7ºC) were among 19 countries that set new record high temperatures in 2010.

[11] Hameed A. et al (2013) The Challenges of Water Sustainability in Iraq. Eng. & Tech. Journal, Vol. 31, Part (A) Nº5.
[12] Yousif, M.D. et al (2015) The agriculture potential development in the Republic of Iraq. Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, Vol. 15, Issue 4.
[13] FAO http://faostat3.fao.org

IFAD has financially supported ICARDA to undertake an assessment of climate change impacts in Iraq and Jordan[14]. According to this analysis, for the period 2010-2040, the annual precipitation is set to decline significantly, but here the outcomes from scenarios A1b and A2 differ substantially. A decline of 5–20% is expected in > 90% under scenario A1b; the same decline is anticipated in only 18% of Iraq under scenario A2. The main factors contributing to the annual precipitation decline are the clearly discernible losses in winter (5-20% less) and spring (10-20% less precipitation in 70% of the territory) precipitation, which are obviously the largest components of annual precipitation. There are erratic patterns in loss/gain of summer precipitation, although in the eastern part (scenario A1b) there are gains of > 20% in summer precipitation, which can be considered irrelevant due to the scarce average seasonal precipitation. The same trend of increase (> 20%) extends into the autumn.

Figure 4. Relative change to annual precipitation between current climate conditions (1975-2010) and the projected climate for 2010-2040 (Left: Scenario A1b; Right: Scenario A2)[15]



The trend of declining precipitation that emerges from the comparison of the current climate with the future one projected by the GCMs, is very much in line with the trend of the past. The results of a trend analysis of coarse-gridded precipitation data for the period 1901–2010, obtained from the GPCC, indicates that annual precipitation has been declining for a long time and that these trends are significant in most of Iraq. The anticipated changes are quite remarkable given that the future conditions evaluated in the project are very near. Precipitation losses are very serious, as they are predicted to occur in the 'near' future and during the growth cycle of winter crops.

Monthly and annual temperature and change are very similar between scenarios A1b and A2. The changes in mean annual temperature between current climate and those for 2010–2040 across the study area are in the range 1–1.5°C. Seasonal differences can be expected in the temperature increase. In winter (December–February) nearly all of Iraq can expect a temperature increase in the range of 0.5–1.0°C. The temperature increases in spring and autumn are expected to be higher than in winter: about 80% of Iraq in the range of 1.0–1.5°C increase for scenario A1b, and 50% of Iraq even in the

[14] De Pauw, E. et al (2015) Mapping climate change in Iraq and Jordan. ICARDA Working Paper 27.
[15] De Pauw, E. et al (2015) Mapping climate change in Iraq and Jordan. ICARDA Working Paper 27.

range 1.5–2°C. Still higher increases (1.5–2°C) can be expected in summer in 100% of Iraq under both scenario A1b and A2.

Figure 5: Absolute change in Maximum Temperature between current climate (1975-2010) and the projected climate for 2010-2040[16].

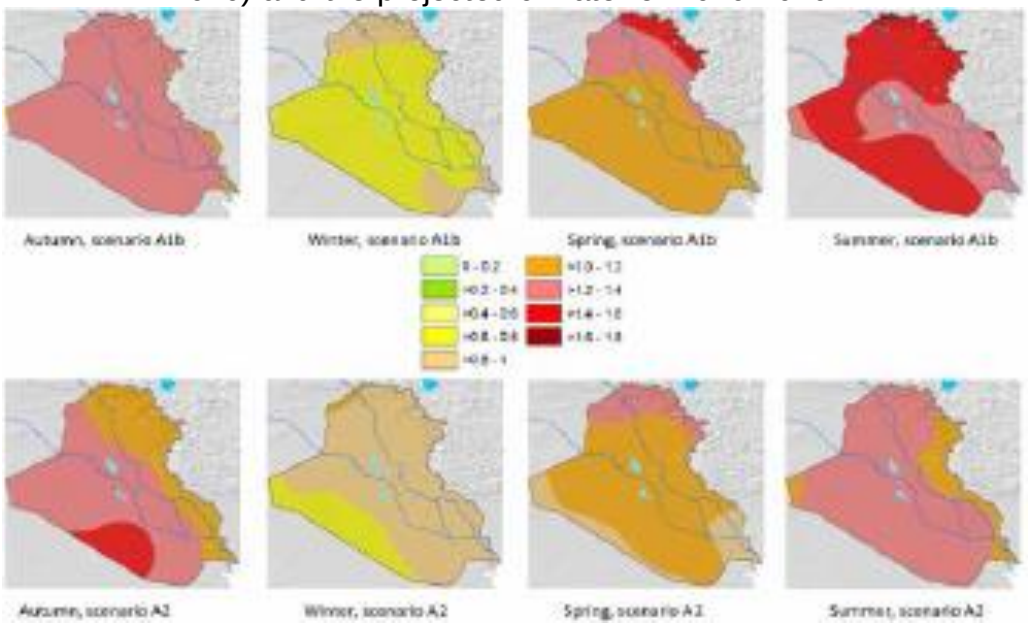
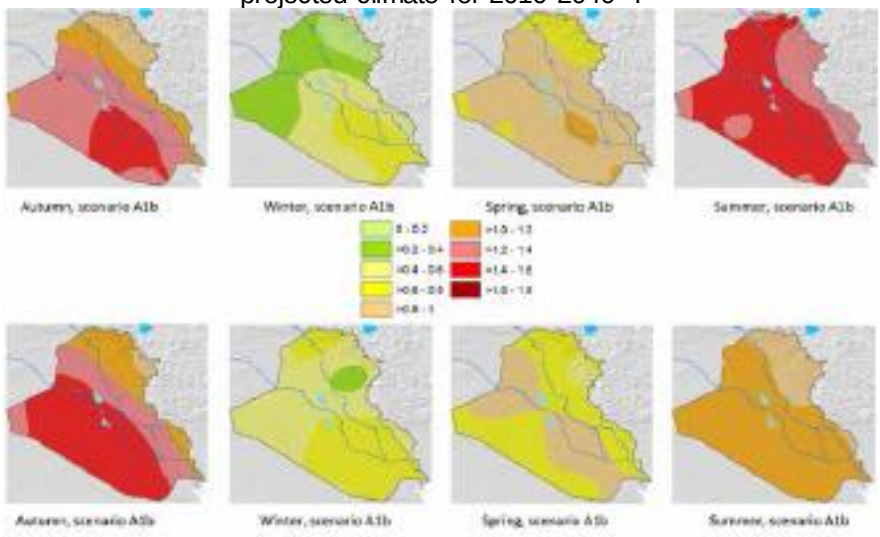


Figure 6: Absolute change in Minimum Temperature between current climate (1975-2010) and the projected climate for 2010-2040[17].

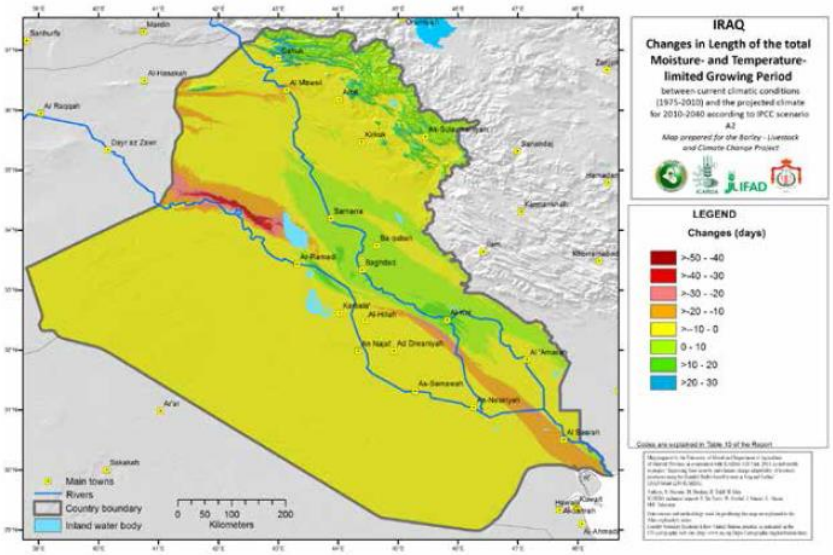


Across Iraq a trend towards more arid conditions prevails, and this trend is similar under A1b and A2. It is to be noted that this trend is in most cases the result of both declining precipitation and higher PET. In 90% of Iraq a decline in the range of 0–15 days is expected in the moisture-limited growing period. Scenario A1b predicts stronger

[16] De Pauw, E. et al (2015) Mapping climate change in Iraq and Jordan. ICARDA Working Paper 27.
[17] De Pauw, E. et al (2015) Mapping climate change in Iraq and Jordan. ICARDA Working Paper 27.

reductions, mostly in the range 15–30 days, in almost 20% of Iraq whereas under scenario A2 such drastic reductions affect only a small part (5–10%). Changes in the temperature-limited growing period are expected to affect small high-altitude areas, with about 6% of the country expected to have an increase in the temperature-limited growing period of 1–30 days. The net effect on the moisture- and temperature-limited growing period would be a reduction of 0–15 days in the vast majority of the country (70–90%), with an increase of 0–30 days in a maximum of 8% of Iraq.

Figure 7. Changes in length of the total moisture- and temperature-limited growing period[18]



[18] De Pauw, E. et al (2015) Mapping climate change in Iraq and Jordan. ICARDA Working Paper 27.

Figure 8. Change of Annual Aridity Index (Scenario A1b)[19].

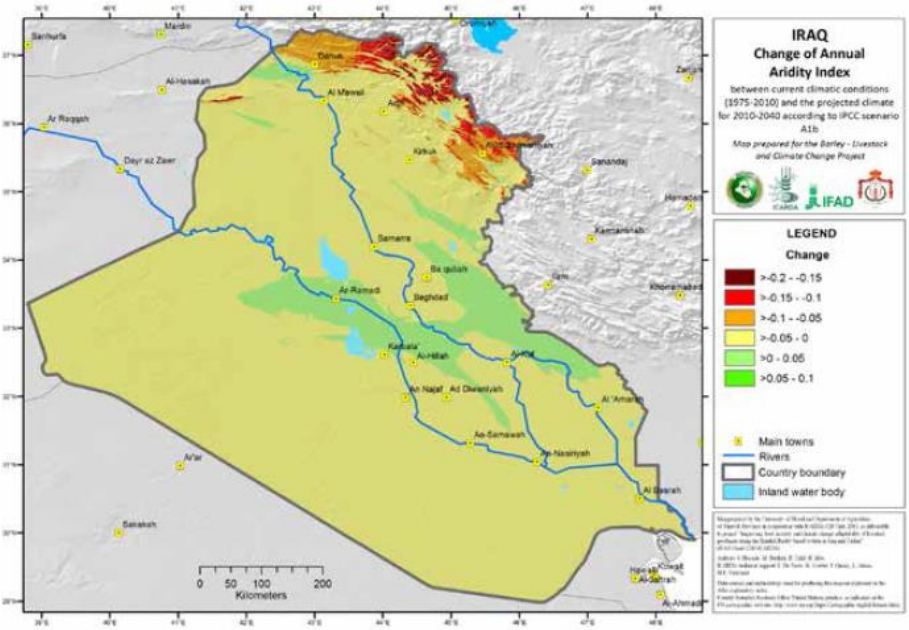
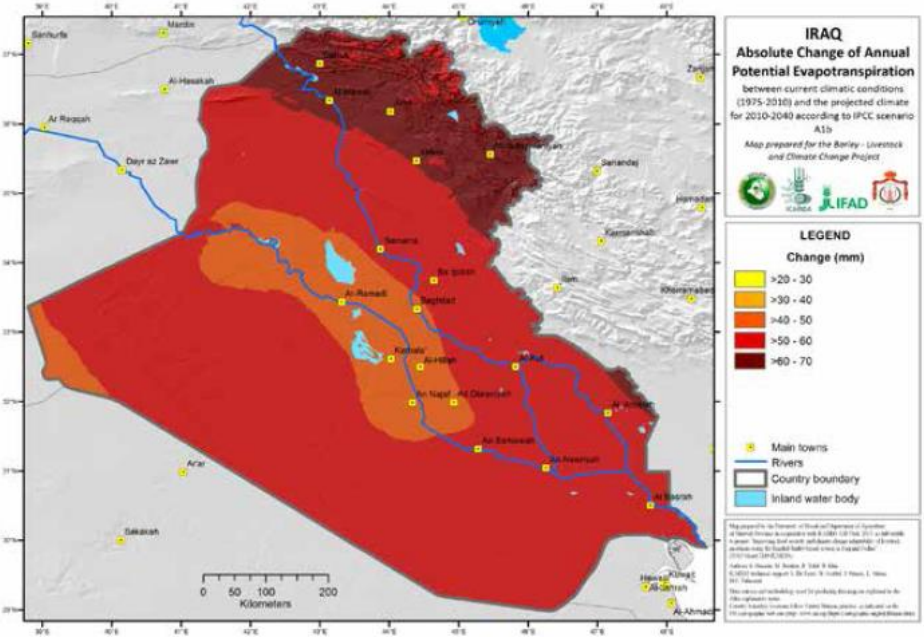


Figure 9. Absolute Change of Annual Potential Evapotranspiration (Scenario A1b)

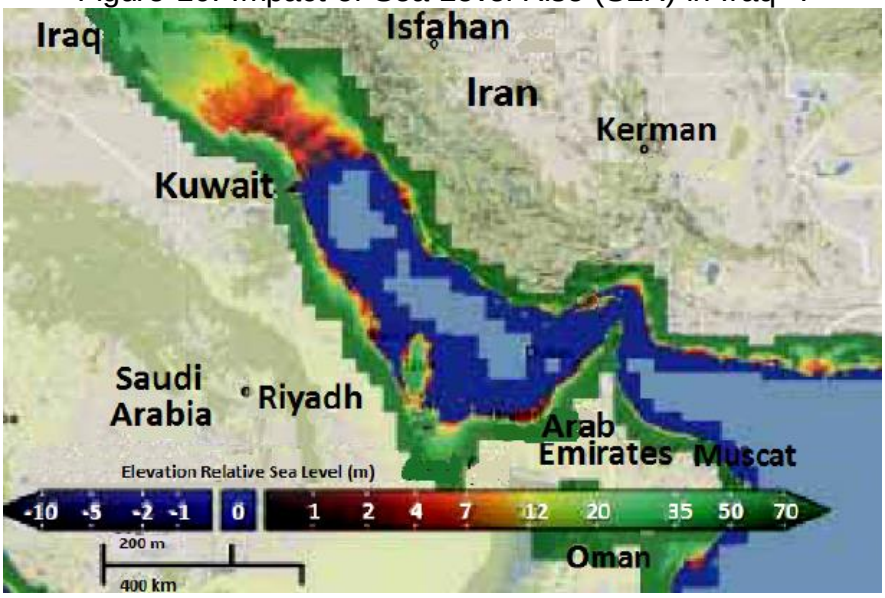


A shortage of water may arise between 2020 and 2030 in the Tigris and Euphrates rivers due to growing demand in the riparian countries. An emergency situation will develop already around 2020 because the expected annual 4 km3 of water remaining as surplus in the two rivers will not be sufficient[20]. Since water shortages are forecast to occur with the development of irrigation, solutions have to be found for an integrated basin-level planning of water resources development. Another main issue in water

[19] De Pauw, E. et al (2015) Mapping climate change in Iraq and Jordan. ICARDA Working Paper 27.
[20] Hameed A. et al (2013) The Challenges of Water Sustainability in Iraq. Eng. & Tech. Journal, Vol. 31, Part (A) Nº5.

resources management is protection of water quality. The level of water and soil salinity especially in the Euphrates River basin is high and is expected to increase in parallel with the temperatures increase as a result of rising up the evapotranspiration, consequently irrigation demand will be increased dramatically without adaptation measures (e.g. the use of micro-pressurized efficient irrigation systems, and soil water conservation agronomic practices such as conservation agriculture). Sea Level Rise (SLR) between 1 to 5 m will be especially noticeable in the Tigris and Euphrates delta with vulnerable areas affected by salt water penetration far inland as near Bagdad with severe effects on water security.

Figure 10. Impact of Sea Level Rise (SLR) in Iraq[21].



2.3.1. CC Adaptation needs

The indicators of climatic change included in the ICARDA working paper are strong and alarming enough to necessitate appropriate adaptation actions at all levels (policy making, institutional and technical capacity development, field implementation of climate-resilient agronomic systems and technologies, prevention and restoration of climate-induced soil and water degradation, awareness raising). What particular adaptation measures would be most appropriate to cope with prediction of climate change impact on agriculture is not a difficult issue since the government has already identified priority measures, and IFAD and other donors have provided financial and technical support to test and demonstrate effective agronomic practices and technologies suitable for the different agro-climatic conditions of 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, №12 (Serial № 73).

2.3.2. CC Adaptation Experience and Lessons Learnt in Iraq

Initial National Communication (INC) to UNFCCC

According to the draft INC document prepared by the Ministry of Health and Environment (MoHE) of Iraq, it is likely that the adverse effects of climate change would reduce the agricultural production and make the problem of water shortage in Iraq worse. Thus, several priority measures should be taken for adaptation and be integrated in policy development at the national and sub-national levels to enhance agriculture development strategies and increase their advantages.

The most important and required adaptation measures for the agricultural sectors are:

Expected decrease in rainfed cultivated areas and crop production issues:

- Raise the irrigation efficiency in irrigated agriculture through development of field irrigation and usage of micro-pressurized efficient irrigation technologies (e.g. drip irrigation, sprinkler irrigation), the promotion of alternative crops of less water consumption, and the establishment of water users' associations.
- Protect and restore desert oases as a source of ground water, grazing, and useful plant materials.
- Establish agro-meteorological stations to provide relevant information and analysis of weather data (also for climate change assessment), including early warning system.
- Establish an effective monitoring system of weather/crop production and natural pastures conditions, including early warning systems for drought, floods, and desertification trend.
- Research and development of crop species and varieties (especially for wheat) resistant to drought, salinity, and adapted to predicted changes in climate.
- Improve management of rain-fed agriculture by digging water wells and applying complementary irrigation.
- Raise the irrigation efficiency in irrigated agriculture through development of field irrigation and usage of micro-pressurized efficient irrigation technologies (e.g. drip irrigation, sprinkler irrigation), the promotion of alternative crops of less water consumption, and the establishment of water users' associations.
- Strengthen strategic crops storage conditions for crops like wheat and barley to address potential drought seasons.

Emergence of new types of pest and diseases affecting plants and animals:

- Use integrated methods for agricultural pest management and reduce reliance on pesticides and herbicides in agricultural systems.
- Conduct further research to identify and/or develop crop varieties which are low water demanding, and resistant to drought, high temperatures, pests, and/or soil salinity, as well as livestock breeds climate-adapted, disease-resistant and highly productive.
- Develop livestock breeds adapted to climate change, disease-resistant and highly productive.
- Conduct studies on climate change impact and adaptation needs for livestock and plant crops

Rangeland degradation and desertification issues:

- Establish rangeland stations in pastoral areas to test innovative techniques for the production of drought- and salinity-tolerant wild fodder seeds and seedlings to restore degraded rangelands.
- Dig well for drinking purposes and cattle grazing in desert areas, also expanding natural reserves.
- Stabilize and establish green belts around movable sand dunes affecting cultivate land, water infrastructure and roads, making use of innovative methods suitable for the Iraq context.
- Develop an effective system to monitor desertification and natural rangeland.

Institutional issues:

- Review agriculture policies and strategies regarding climate change impacts and adaptation needs.
- Promote research on climate change adaptation in agriculture systems.
- Develop effective monitoring system of climate change trends, ensuring awareness and access to information to government and farmers for timely responses and decision making on adaptation procedures.

The most important and required adaptation measures for the water sector in relation to the irrigation facilities are:

- Use modern methodologies for an integrated management planning of water resources in Iraq.
- Establish hydrological stations to monitor water resources in terms of quality and quantity.
- Use groundwater storage in a sustainable manner, especially the renewed for agriculture to compensate for the shortfall in surface water imports.
- Continue establishing small dams in desert and non-desert areas for drinking, agriculture and livestock requirements.
- Follow modern efficient irrigation systems (drip irrigation, sprinklers, deficit irrigation), raise awareness of farmers to adopt them, and support the establishment of water users' associations.
- Assess the performance of the irrigation and drainage infrastructure, and research and development programmes to prevent pollution and losses.
- Increase the efficiency of field irrigation, like the adoption of close irrigation method and lining field channels to reduce waste.
- Support research and promote the use salt and sewage water in irrigation without damaging soils
- Find different patterns of agriculture on the basis of availability of water, such as covered agriculture and hydroponics, to rationalize water consumption and dispose of prevailing salinity in soil.
- Apply and expand water harvesting techniques in desert areas to take advantage of rain floods.

- Build institutional and technical capacity on climate modelling, hydrological modelling, and mainstreaming adaptation measures into water management.

Emerging national agriculture development programs. 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 include: (i) the national program for the use of on-farm modern irrigation systems; (ii) the national program for the improvement of wheat production; (iii) the national program for the development of drought and salinity tolerant crops; (iv) the rangeland improvement and combatting desertification program; (v) the organic agriculture program; (vi) the program for the establishment of an agricultural meteorology network; (vii) the program for the genetic improvement of local animal breeds; and (viii) the conservation agriculture project.

Lessons learnt from IFAD and other donors' supported projects and programs.

The above national agriculture development programs have tested and demonstrated the effectiveness of a wider range of climate change adaptation approaches and advanced technology packages developed by the National Agricultural Research System (NARS) and other partners (e.g. ICARDA, FAO) through several regional agriculture research for development (R4D) projects (some co-financed by IFAD grants inclusive of Iraq). Among the promising validated technology packages released by these R4D projects, the following are relevant for being replicated and up-scaled by the Climate Resilient Crop and Livestock Production (BRAC) Adaptation Fund Project:

- For water use efficiency, supplemental irrigation in rain-fed areas resulted in higher yield, increased water productivity from 0.96 kg to 3.7 kg of grain per m^3 of water, prevented excessive use of water, and modified the crop calendar considered as an adaptation measure to climate change. Irrigation through mechanized raised bed technology increased wheat productivity while saving on water resources - applied water was reduced by 30%, yields increased by 25%, seed rate reduced by 50 %, and on-farm water use efficiency increased by 72%.
- Comparison between water use efficiencies for various irrigation methods (drip, basin and bubbler) on date palms have shown that the drip system has the highest water use efficiency. Economic analysis found that the total cost for the subsurface drip irrigation system per hectare (including; investment management, operation, etc..) can be less than 30% compared to the center pivot system.
- For conservation agriculture, which is considered as a climate change adaptation best practice, grain yield increased from 460 kg per ha to 860 Kg per ha under zero tillage in rain-fed farming. The increased adoption by farmers of zero tillage came about through three pivotal strategies: focus on adaptive research and development; availability of low cost zero-tillage seeders; and farmer participatory extension and testing.
- For date palm, integrated pest management and organic fertilization practices are promising. In addition to environmental benefits, shifting from chemicals to bio-

pesticide for the date palm Dubas Bugs resulted in an incremental return of USD 8440 per ha.

- For rainfed integrated crop-livestock production systems, diversification helped spread the risk and increase revenues. Diversification included on-farm feed production, use of by-products for making feed blocks, barley production, cactus and fodder shrub plantations, improved natural pasture and range management, as well as alley cropping.
- For small ruminants, the application of holistic packages to improve sheep flocks' reproductive performance resulted in an increase of 55% to 80% of fertility rates and increased twinning rates from 5% to 24%. The reduction of winter-feeding gap by increased production of forage during the shortage period, not only released the pressure on natural rangelands, but also increased milk production by 15% per ewe and decreased mortality by 47%.

IFAD support to Iraq has so far been limited to grant financed regional agriculture research projects implemented by ICARDA. The key lessons learnt form IFAD financed regional research grants, IFAD investment projects in NEN countries, and work of other partners and donors and that can prove relevant to the BRAC project design are:

- Small-scale farmers are willing to adopt improved production technologies, but they need to see results first. Given small scale farmers are risk averse, incentives to pay for the first year the cost of incremental inputs and services embodied in the new technologies, are essential to help taking risk.
- On-farm adaptive research complemented by a network of demonstrations at farmer's field composed of a lead farmer and several satellite farmers, and/or a network of farmer field schools (FFS) are effective platforms for quick dissemination of technologies. During this process, knowledge is shared and interactions among farmers produce a long-term effect.
- The sustainability of impact generated by IFAD investment projects beyond the completion date require government commitment to continue funding technology transfer activities and beneficiaries' ownership to operate and maintain the collective assets created by the project.

II. Project / Programme Objectives:

List the main objectives of the project/programme.

The **Project Objective** is *"to strengthen the agro-ecological and social resilience to climate change in the four target governorates, by enhancing water availability and use efficiency, and promoting adaptive agriculture production systems and technologies for improved livelihoods and food security of rural households*".

The project is designed to deal with one of the major constraints in the country that centres around the growing scarcity of irrigation water and to assist the country with strengthening its capacity at the national level for monitoring climate change patterns and providing relevant information to key stakeholders and farmers to enable them to undertake adaptation and risk mitigation measures through an early warning system.

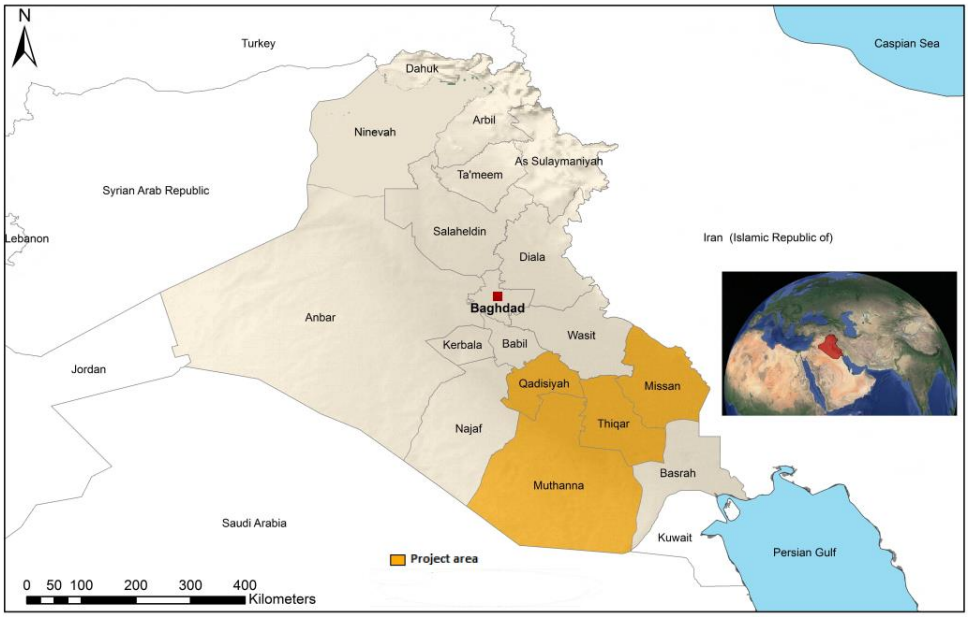
Title of the Project: Building Resilience of the Agriculture Sector to Climate Change in Iraq (BRAC).

Geographic targeting. The project would intervene in the four governorates of Muthanna, Qadisiya, Missan and Thi Qar where the poverty rates amount to 53%, 41%, 42% and 41% respectively (highest levels of poverty in Iraq), where agriculture production depends on irrigation, opportunities for increasing productivity/incomes exist and security situation permits. It is estimated that these Governorates have 72,480 farming households of which more than 90% are smallholders with less than 50 dunums or 12.5 hectares. The average landholding size in these Governorates is around 8 hectares.
The four project governorates share roughly similar socio-economic characteristics. The climate is generally dry desert climate. In summer, temperatures easily surpass 40°C, while rainfall is very limited and restricted to the winter months and is reported to average around 110 mm annually. These governorates were neglected during the rule of the Ba'ath party, and despite some of them producing oil, there is lack of investment in these areas. The UN sanctions, which were imposed after the Iraqi invasion of Kuwait in 1990 and lasted until after the 2003 invasion, was detrimental for Iraq's economy but had a particularly devastating impact on these areas. Infrastructure suffered due to the war and the limited investment in the area. The agriculture sector has suffered from adverse side effects of the Public Food Distribution programme, which was set in place after the 1990 invasion of Kuwait to provide Iraq's population with subsidized food rations. The programme pushed down the prices of staple crops like wheat and rice, making them unprofitable for farmers.

Figure 11. Target Governorates for the BRAC project and the IFAD Smallholder Agriculture Revitalization Project (SARP) baseline intervention

REPUBLIC OF IRAQ

SMALLHOLDER AGRICULTURE REVITALIZATION PROJECT (SARP)



The designations employed and the presentation of the material in this map do not imply the expression of any opinion whatsoever on the part of IFAD concerning the delimitation of the frontiers o boundaries, or the authorities thereof.

IFAD *Map compiled by IFAD* | 06-01-2017

Climate change will have a significant impact in the target governorates: (i) the relative change of Annual Precipitation for the period 2010-2040 will be the highest with up to 20-30% less precipitation in large parts of the regions according to Scenario A1b (in the rest of Iraq precipitation reduction will not be higher than 20%); (ii) absolute change of Annual Maximum Temperature will be the highest with an increase up to 1.6ºC according to Scenario A1b. The 4 governorates covered by the project are already and will be even more severely subject to climate change risks in the form of frequent seasonal and yearly droughts, heat waves, sand storms and associated land degradation and desertification.

The Muthana Governorate's landscape is dominated by desert plains, with only a narrow ribbon of irrigated farmland along the Euphrates River in the north. The population is concentrated along the Euphrates River in the north of the governorate, while the southern desert districts are only sparsely populated. Muthanna is an important center for the production of cement and other construction materials. In 2005 an oil refinery was opened in Muthanna, which processes crude oil from the Kifl oil field. The salt waters of Lake Sawa provide salt, which is used as a raw material in various industries. The lake's touristic infrastructure has dilapidated over the years, but the area still holds the potential to be developed into a touristic hotspot. The governorate is divided into four districts: Al-Samawa, Al-Khidhir, Al-Rumaitha and Al- Salman

The governorate of Qadissiya has Euphrates and one of its major tributaries, the Shamiya River, running through the governorate. The abundance of water and rich soils

make the governorate one of the most fertile areas of the country. Rice, wheat and barley are the main crops cultivated in Qadissiya, while hibiscus and melon are also grown on a smaller scale. A number of factories producing tires, dairy and cotton textiles are located in Qadissiya. Qadissiya's economy is hampered by a number of factors. A large number of jobs provided by the agricultural sector are informal and unwaged. Other economic sectors like industry remain underdeveloped. The governorate is divided in the following districts: Diwaniya, Afaq, Al-Shamiya and al Al-Hamza.

The governorate of Thi-Qar is one of the most underdeveloped governorates of Iraq. The economy has remained relatively rural compared to other regions in Iraq. The agricultural sector however fails to provide jobs and income for the governorate's population. The draining of the marshes also devastated traditional fishing and farming methods of the Ma'dan. During the past decade the public sector and construction have been major job providers, but low wages have been an issue for public service workers. The governorate of Thi-Qar is the poorest governorate of Iraq. The level of poverty does vary between the various districts and is the most stringent in the marshland areas. The local agricultural-based economy of the marshlands was devastated by the draining campaign and needs significant investments in infrastructure and other services. Tribal identity and structure remain strong in Thi-Qar. A patchwork of tribes, many of them descendants of the Muntafiq tribal confederation that governed the area in Ottoman times, is living across the governorate. The governorate of Thi-Qar is divided into five districts: Al-Chibaysih, Nassiriyah, Al-Rifa'i, Al-Shatra and Suq Al-Shuyukh.

The governorate of Miysan is located in south-eastern Iraq on the border with Iran. The Tigris River runs through the governorate and feeds the marshlands which once covered two thirds of this governorate. This fragile and unique ecosystem and world heritage site has shrunk drastically following the draining campaign of the 1990s, with much of the drained landscape turning into desert. The marshlands of Miysan form part of the ancestral homeland of Marsh Arabs. Tribal bonds and identity remain strong in the governorate. The economy of Miysan has long been based around agriculture. The productivity of Miysan's agricultural sector has however suffered greatly from the destruction of the marshlands during the draining campaign. The governorate is an important industrial center, hosting a range of factories that are mainly producing construction materials like gravel and cement. The crumbling infrastructure and a lack of investment however are hindering industrial development. The Halfaya oilfield is also located in Miysan and oil production started in 2012.

Target groups and typology. It is estimated that the proposed project would target 16,000 of the households over its seven-year duration. This is likely to yield benefits for around 110,400 people given the current household size of 6.9 in rural areas.

Table 4. Estimated Households and Land Area in Target Governorates

Governorate	Household	Arable Land	
		Area Ha	Irrigated (Ha)
Al-Muthannā	18,639	363,363	136,119
Al-Qādisiyah	18,798	458,440	207,912
Thī Qār	18,570	447,662	88,863

Maysān	16,473	636,818	150,875
	72,480	**1,906,284**	**583,769**

The target groups will be smallholder households engaged with crop and livestock production, poor households who have been forced out of agriculture due to lack of access to adequate water and high levels of salinity in the soils, women-headed households interested in undertaking productive activities and youth interested in undertaking enterprises and income generating activities particularly centred around agriculture and the ancillary services critical to support agricultural growth. The project would also target special population groups like the marshland Arabs, suffering severe poverty, lack of clean drinking water and sanitation, health care and education facilities, who were obliged to abandon rice cultivation and are currently engaged with fisheries, livestock and hunting in the wild to eke out a meagre livelihood.

The typology of the typical target households would vary marginally between one governorate and another but would include: (i) Poor irrigated date and vegetable farmers with small ruminant as an important contributor to income (Thi Qar and Muthanna governorates); (ii) Poor farmers producing cereal crops in irrigated areas which suffer from severe soil salinity conditions with small ruminant as an important contributor to income (Qadisiya governorate); (iii) Poor date palm producers with livestock as a secondary activity (Miysan governorate); (iv) The farmers of the marshlands, mainly involved in fishing, handicrafts, and at a lower scale water buffalos rearing; (v) Poor rural households, especially women headed households, engaged in various on farm and off farm income generating activities: and (vi) The youth who would be assisted with skills developed and enterprise development. On the whole, low input agriculture offers a range of interesting options for IFAD target groups. Plastic houses have proven to be successful, if sufficient training on how to use and maintain them, is provided. Beekeeping is another activity that would be pursued as honey has an assured internal market.

III. Project / Programme Components and Financing:

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US$)
1. Capacity development to integrate CC adaptation and risk reduction into agriculture planning and production systems	1.1.1. Climate change adaptation strategy for the agriculture sector developed	1.1. Increased capacity of governmental staff on mainstreaming CC adaptation into the agricultural sector	83,000
	1.1.2. Skills for relevant governmental staff on climate change adaptation and risk reduction developed		100,000

	1.1.3. A Training-of-trainers (ToT) programme is implemented targeting public administration staff, at national and governorate levels, dealing with mainstreaming CC adaptation into environmental, agriculture and water issues.		81,000
	1.2.1. Project beneficiaries are trained on climate-resilient approaches and technologies	1.2. Technical and institutional capacity of agriculture practitioners and producers' organizations in the 4 targeted governorates developed to integrate knowledge on climate-resilient systems and technologies into practice	180,000
	1.2.2. Water users and organizations are enabled to effectively manage irrigation water in the target areas.		40,000
	1.2.3. Lessons learned and best practices on climate change adaptation are shared		45,870
2. Climate-resilient Agriculture Investments	2.1.1. Efficient water supply from tertiary canals up to farmland plots is secured based on climate-proof systems and technologies.	2.1. Climate-proof systems and technologies for water supply from tertiary canals up to farmland plots are implemented in the target governorates	5,240,000
	2.2.1. Agro-meteorological network upgraded and weather information management system developed	2.2. The national Agro-meteorological Monitoring Network is upgraded informing early warning systems	410,000
	2.2.2 Climate-risk early warning systems developed		319,000

	2.3.1. Grant packages allocated to farmer groups and associations of women for climate-resilient agriculture investments, including production, post-harvesting, processing and income diversification equipment and infrastructure.	2.3. Climate resilient agriculture technologies adopted by target farmers and producers' organizations	2,303,000
4. Project/Programme Execution cost			418,000
5. Total Project/Programme Cost			9,219,870
6. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)			779,790
Amount of Financing Requested			9,999,660

Projected Calendar:

Milestones	Expected Dates
Start of Project/Programme Implementation	Jun 2018
Mid-term Review (if planned)	Nov 2021
Project/Programme Closing	2024
Terminal Evaluation	2024

PART II: PROJECT / PROGRAMME JUSTIFICATION

A. Describe the project / programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.

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. Since agriculture is the economic and social safety net of the rural poor in the country, any poverty reduction strategy has to incorporate CC risk reduction objectives.

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. Because climate change will turn into less water available for agriculture and higher soil salinization and land degradation, it will be necessary to:

(i) Avoid irrigation water losses – rehabilitated and modernized irrigation and drainage infrastructure - and adopt efficient on-farm irrigation and soil and water conservation technologies, so they can minimize irrigation water needs, increase soil water storing capacity, and secure water availability to cover the ecosystems and human needs;

(ii) Increase soil cover and soil stability (e.g. enhancement of permanent soil cover and mulching in agriculture land; vegetation restoration in degraded land with special focus on salt-tolerant species) as a way to minimize the CC exacerbation of soil salinization and erosion risks.

The BRAC Project will address the CC adaptation priorities proposed by the Ministry of Health and Environment (MoHE) in the INC to the UNFCCC, and the emerging national programs of the Ministry of Agriculture (MoA), that were tested by the National Agricultural Research System (NARS) and other partners (e.g. ICARDA, FAO) through several regional agriculture research for development (R4D) projects. The BRAC Project will help replicate and up-scale climate-resilient irrigation and agriculture management practices and technologies in the 4 target governorates, rehabilitate and complete irrigation and drainage schemes to improve water availability and efficient use, and build capacity and support institutional development for the upscaling of results at both policy and local implementation levels.

The emerging national programs of the MoA aim to create an enabling environment that will facilitate the development of farmers' adaptive capacity through: (i) increased access to climate-resilient technologies and plant/animal species and varieties well adapted to

environmental constraints, especially drought- and salt-tolerant; (ii) the organization of farmers in associations or cooperatives to organize water irrigation quotas, improve access to agriculture machinery and inputs, finance and training, increase marketing opportunities, and share knowhow to improve irrigation and agronomic management practices; (iv) the availability of rural financial services and affordable investment loans, performing extension services and incentives for the adoption of new technologies.

BRAC project will be fully blended with the IFAD baseline "Smallholder Agriculture Revitalization Project" (SARP) with the overall goal to assist rural people overcome poverty and achieve food security through remunerative, sustainable and resilient livelihoods. BRAC, with and IFAD grant contribution of 2.5 million and loan contribution of USD 15.7 million, has two outcomes: (i) Outcome 1 "increase poor rural people's productive capacities" through irrigation infrastructure rehabilitation to increase accessibility to irrigation water for vulnerable smallholders; and (ii) Outcome 2 "increase poor rural people's participation in rural enterprises" through grant funding to assist poor households enhance their level of food security and diversify their incomes from agriculture as well as improve their skills and assets to enable them to engage in off-farm income generating activities. BRAC will help incorporate CC adaptation objectives and measures into SARP baseline activities through: (i) the promotion of climate-proof technologies; (ii) a policy dialogue to help mainstream CC risk reduction into agriculture policies and regulations affecting soil and water conservation; (ii) improved access to suitable financial services, facilitating the acquisition of equipment and inputs for the adoption of climate-resilient efficient irrigation and sustainable agronomic technologies and practices for selected crops; (iii) capacity development of providers of services, individual farmers and farmers' organizations to help them shift from conventional to climate-adapted agriculture production, and improve farmers' post-harvesting marketing skills, specially looking at gender and youth unemployed problems. The project will become a platform for individual farmers, farmers' organizations, policy-makers, civil servants, agribusiness, cooperatives, service providers, researchers, NGO, and the financial sector, to work jointly on agriculture adaptation to climate change and implement effective adaptation measures.

BRAC will test new approaches and technologies in the agriculture context of Iraq that could be scaled-up through the financial contribution of IFAD. The input of BRAC funding will translate into: (i) more sustainable land management, higher yields and more diversified production through efficient irrigation and sustainable agriculture systems and technologies, and better adapted crop types and varieties supporting sustainable agriculture production in the target areas; (ii) improved access to CC-resilient technologies and knowhow thanks to the facilitated access to improved services, inputs, and credit for producers, the positive impact of targeted technical and institutional capacity development, and the implementation of on-the ground activities, including farmer field schools and research trials. Efficient irrigation technologies will also represent an important tool to prevent salinization problems arising from the excessive use of irrigation water (e.g. drip irrigation effects in reducing root-zone soil salinity and drainage), as has been demonstrated in numerous agriculture development projects in arid, semi-arid and sub-humid zones worldwide. In some areas with salt-

affected soils the project will analyse the possibility to promote the use of more salt-tolerant crop and forage species and varieties.

Component 1. Capacity development to integrate CC adaptation and risk reduction into agriculture planning and production systems.

The BRAC Project will be instrumental in supporting the mainstreaming lessons learned on CC adaptation and agro-ecological restoration knowhow in decision-making, rural planning and agriculture production processes, promoting broader awareness, institutional development and technical capacity among small holder farmers, farmers' organizations, extension agents, policy makers and other stakeholders in Iraq.
This project component will build the capacity of individual farmers, farmer associations or cooperatives, water user associations, civil servants and other local stakeholders to adopt climate-resilient agronomic systems and technologies (e.g. EIT, CA, OA, IPM), and produce and implement CC adaptation plans (e.g. vulnerability assessments, land and crop suitability planning, drought contingency plans), that incorporate soil and water conservation, and climate-risks reduction needs.

The most critical factor to encourage the uptake of climate-resilient agronomic systems and technologies is to achieve a change in perception among decision-makers and practitioners, which can lead to a better understanding and acceptance, and to the establishment of incentives for sustainable land management practices and technologies. This requires extensive collaboration among farmers, researchers, extension personnel, NGO, and decision-makers, to verify and adapt know-how to local conditions, share lessons learned, and transfer/upscale successful results to other areas in the country. The resulting information from successfully demonstrated practices will allow politicians to formulate effective policies and adopt the financial mechanisms needed to extend their nationwide adoption.

Outcome 1.1. Increased capacity of governmental staff on mainstreaming CC adaptation into the agriculture sector.

This outcome will revolve around two types of actions built into the same policy overarching framework: (i) governmental staff from relevant institutions and departments have acquired knowledge to mainstream CC adaptation recommendations for the agriculture sector into policy documents and official reports responding to regional and global processes; (ii) capacity development of governmental staff to apply and transfer knowledge on climate change adaptation and climate-risk reduction in agriculture planning and production.

Output 1.1.1. Climate change adaptation strategy for the Agriculture Sector developed.

The Ministry of Health and Environment (MoHE) is interested in developing a climate change adaptation strategy for dealing with the agriculture sector. The project would assist the Ministry in this endeavour through the provision of technical assistance to relevant staff in charge of drawing up a climate change adaptation strategy for the

agriculture sector. The identification of agriculture adaptation needs in the four target governorates will form a fundamental part of the CC adaptation strategy for the agricultural sector, in the form of detailed case studies.

The project will hire an international expert to review and analyze the national agriculture strategies, programs and plans, including cross-sectorial issues influencing agriculture development. The analysis will be based on field surveys, discussions with all relevant stakeholders, modelling, and bibliographic revision of examples and relevant case studies from Iraq and abroad. In consultation with national stakeholders, a draft initial adaptation strategy will be prepared, considering all the components which need to be in place, such as regulatory, technical, legal, capacity development, institutional, among others, and be in line with relevant national regulations and legislation. The strategy shall address the following (but not be limited to) issues: (i) analysis of current vulnerability and future climate risks; (ii) assessment of development strategies, policies and plans; (iii) linkages between adaptation and sustainable development at the local, sectoral level (agriculture, water resource management, climate-risk, etc.), national level and governorate levels; (iv) mainstreaming climate change risks and adaptation into national agriculture policies, programs and priorities and ensuring that information about climate-related risks, vulnerability, and options for adaptation is incorporated into planning and decision-making in key sectors, such as agriculture, water, climate-risk management; (v) define strategic partnerships with national bodies, local authorities and civil society; (vi) contain monitoring and evaluation framework for the Adaptation Strategy.

The draft version will be present in a workshop involving all concerned ministries and will be the subject of consultations with key stakeholders (e.g. academia, Research organizations, NGO, farmers' organizations, etc.) to collect inputs for drafting the final version.

Output 1.1.2. Skills for relevant governmental staff on climate change adaptation and risk reduction developed.

The project will assist the MoHE and MoA through institutional and technical capacity development of relevant staff in charge of drawing up a climate change adaptation strategy for the agriculture sector. Learning will address: (i) the major challenges that face agriculture and irrigation in Iraq; (ii) CC downscaling methodologies of how climate affects different crops and livestock production in the target governorates, to guide the selection of suitable crops/varieties and livestock breeds, and the adjustment of crop production and post-harvesting calendars, technologies and management systems; (iii) decision-making tools to define the amount of land/location and water resources that should be devoted to each crop in the target areas; (iv) optimal cropping patterns and water allocation, among different alternatives, which satisfies the existing land and water availability constraints, as well as the socio-economic conditions of the target areas, (iv) criteria and instruments to be used in irrigation water planning and management.

The project will also strengthen the programmatic and analytical capacity of the team of young specialists at the Ministry of Agriculture in charge of the Meteorological

Monitoring Network that will be upgraded under Output 2.2.1. Trained staff will get the necessary capacity to manage and maintain the monitoring network and weather information management system, ensuring the dissemination of the information relevant for farmers, extension centres, and research stations.

The project would provide opportunities for the staff from the Directorate of Agriculture in the project governorates and other relevant staff to avail of special training opportunities and exposure visits especially within the region. It is expected that 300 people from different agencies could avail of specific trainings in addition to the learning and exposure visits. South-South and Triangular Cooperation (SSTC) would be explored as a tool to understanding how countries in the region with similar socio-economic profile have resolved some of the challenges in agriculture and rural development. These areas could include understanding how different countries have dealt with some of the following issues important for Iraq: (i) climate change issues and developed early warning systems (Nepal and Bangladesh); (ii) monitoring climate-related pest and diseases' risks, including the implementation of integrated pest management approaches, especially for the elimination of the Red weavil in date palm (Iran and Kuwait). Visits would be organized to these countries which would be followed by the key resource visiting the project areas.

Output 1.1.3. A Training-of-trainers (ToT) programme on climate-resilient agronomic systems and technologies is implemented targeting public administration staff, at national and governorate levels, dealing with mainstreaming CC adaptation into environmental, agriculture, and water issues.

The project will provide training to increase the capacity of governmental staff at the national and governorate levels on climate-resilient agronomic systems and technologies suitable for the agro-climatic conditions of the target governorates. Lead farmers, researchers, higher education teachers, and NGO members will also be invited to participate in the training programme. The participants will be empowered to effectively guide farmers and farmers' organizations in the process of shifting from conventional agriculture to climate-resilient agriculture systems, and of effectively addressing environmental problems affecting agriculture production.

During the first year, the project will design and develop Training-of-Trainers (ToT) programmes and produce training materials on: (a) technical knowledge on improved cultivars, based on local varieties suitable for CC predictions, and climate-resilient agronomic practices for irrigated and rain-fed crops (e.g. EIT, CA, OA, IPM) and livestock management, including production, post-harvesting, processing and marketing issues; (b) technical knowledge on adaptive management of livestock and pastures, including production processing and marketing issues; (c) technical knowledge of preventing major environmental problems, such as soil and water salinity, and integrated pest management; (d) technical knowledge to raise awareness of practitioners about early warning mechanisms, their potential benefits, challenges for farmers and all concerned actors in taking decisions during such early warning, and knowhow in interpreting and taking suggested protective measures. The training programmes will draw on the information from the detailed case studies on climate change adaptation

needs for the different types of crops and livestock production in the four target governorates, included in the CC adaptation strategy for the agriculture sector (Output 1.1.1).

The ToT programmes will provide training courses throughout the life of the project, on an annual basis, and will be aimed at enhancing the capacity of at least 150 staff providing extension support to farmers. Training will not only address technical knowledge but also provide teaching techniques that are suitable to the different land practitioners in the target governorates. The participants will evaluate the different training courses, so these can incorporate their suggestions and feedback in the following years. In the last year, the project team will produce and disseminate a training manual, collecting the experiences acquired throughout the training programmes.

As part of the learning process, participants will be required to apply the theoretical knowledge received in on-farm demonstrations that are described in Output 1.2.1. These practical assignments will enable trainees to put in practice the knowledge gained, exchange knowledge with the farmers, and strengthen their facilitation skills. In this sense, the project would collaborate with the Food and Agriculture Organization to use their experience of ToT for the surveillance, monitoring and control of the disease through using Integrated Pest Management, vegetation production in plastic houses, among others.

Outcome 1.2. Technical and institutional capacity of agriculture practitioners and producers' organizations in the 4 targeted governorates developed to integrate knowledge on climate-resilient systems and technologies into practice.

Experience shows that the main ingredients for a successful adoption of sustainable agriculture practices and technologies are: (i) a close collaboration since the very early stages among farmers and qualified researchers, extension agents, civil servants and agro-environmental NGO; (ii) the institutional development of farmers' organizations; (iii) the establishment of on-farm trials supported by strong local champions – leading farmers and/or pioneer research/academic/NGO; (iv) participatory technology development, education and training; (v) the design of a sound implementation strategy incorporating environmental and social concerns; (vi) the existence of a supportive policy framework, rural finance, marketing and value-chain development.

IFAD support to Iraq through grant financed regional agriculture research projects implemented by ICARDA, as well as other IFAD investment projects in the region, have provided key lessons that can prove relevant to this outcome: (i) small-scale farmers are willing to adopt improved production technologies, but they need to see results first; (ii) on-farm adaptive research complemented by a network of demonstrations at farmer's field composed of a lead farmer and several satellite farmers, and/or a network of farmer field schools (FFS) are effective platforms for quick dissemination of technologies. During this process, knowledge is shared and interactions among farmers produce a long-term effect.

This outcome will build on these positive results and will help scale-up on-farm learning for farmers in the 4 target governorates. As a result of the community empowerment effort carried out through the Adaptation Fund and the SARP baseline project, it is expected that 4,400 of smallholder farmers and farmers' organizations will operate on the basis of sustainable land management and climate resilient farming systems.

Output 1.2.1. Project beneficiaries are trained on climate resilient approaches and technologies.

The project would provide training to smallholder farmers to raise awareness, inform and promote the adoption of climate resilient approaches and technologies that would enhance crop and livestock production. A series of thematic training will address the following issues:

- Climate-resilient agricultural production systems and technologies (e.g. CA and crop rotation systems, OA, EIT, IPM, sustainable pasture management) that help raise productivity, obtain quality products, and optimize the use of inputs to lower production costs, by reducing climate-risks and improving environmental services supporting agriculture production.
- Efficient irrigation technologies and on-farm water management to deal with the growing water scarcity in the area.
- Learning about the production of a wider range of crop varieties and breeds (e.g. drought- and salt-tolerant fodder and food crops) better adapted to predicted climate conditions in the agro-ecological types of the target governorates. The introduction of saline resistant wheat, rice and fodder crop varieties, which have been developed in Iraq but have not been widely disseminated (e.g. Al Hussein wheat variety which is characterized by its tolerance to the salinity).
- Date palm management which is the most common and widely cultivated plant in the arid regions of the Middle East and is an important crop for smallholders in Iraq. Pests such as Dubas Bug, Borers, and Fungal diseases directly affect the product but others such Red Palm Weevil (RPW) *Rhynchophorus ferrugineus* which have invaded the country, pose a real threat to the date palm wealth in Iraq. The project would collaborate with FAO to use their experience of Training of Trainers for the surveillance, monitoring and control of the disease through using Integrated Pest Management.
- Methods of dry cultivation of rice with by use of drought tolerant rice genotypes and growing rice under sprinkler irrigation or use of intensive rice systems (IRS) to increase productivity and efficient water use.
- Apiculture and medicinal plants production.
- Learning about new technologies supporting CC adaptation and mitigation objectives, such as cold storage and transportation technologies for reducing post-harvest losses, drying and rehydration and processing units to raise productivity and diversify production (raw and processed products) without increasing pressures on natural capital; energy saving technologies (e.g. solar water pumping, solar honey production units).
- Livestock extension and health services including training of small ruminant holders in animal nutrition and use of alternative animal feed resources through preparation of feed-blocks, silage and improved fodder crops, animal health, integration of

livestock into farming systems and the valorisation of crop residues in improved livestock feed. In designing the training programme, the project would design a full package of technology for the introduction of modern animal management. The package would include introduction of artificial Insemination or improved rams for enhancing breeding rates, animal health, selection, early weaning, balanced ration, feeding alternative feed resources, increase twinning rates with hormone therapy. Increase the depleted stock of livestock in the irrigated areas to maximize the return from land especially by growing forages and grazing animals on crop residues.

It is expected that the project would training around 4,400 individuals on climate-resilient agronomic practices in the project area, of which at least 1,400 would be women.

The shift towards adaptive management practices and technologies will be facilitated by the involvement of pioneer farmers who demonstrated the agronomic, environmental, financial, and livelihood benefits of best practices by adopting them on their land. Therefore, the project will promote where conditions exist for it the Farmers Field Schools (FFS) approach, which has proven successful in agriculture development projects supported by IFAD in Iraq and the region. With technical and financial support from the project, on-farm demonstration plots will become “learning-by-doing” fora where poor-asset small farmers from neighbouring areas will find an ideal place to interchange ideas and experiences, and learn about new production systems and techniques that can be successful replicated.

Output 1.2.2. Water users and organizations are enabled to effectively manage irrigation water in the target areas.

Awareness raising, consultations with farmers, and training will also tackle the institutional development of water users’ associations (WUAs). WUAs need strengthening, both in the technical capacity of their executive bodies and in their governance in order to be fully in line with effective participatory water management principles. The project will assess suitable options for on-farm irrigation service provision, including the support of existing and new WUAs through training to provide for better ownership and management optimization of irrigation infrastructure.

The project will organize workshops and meetings with WUAs, and relevant staff from the MoA and MoWR (Directorate of Water Resources) to discuss about governance improvement needs, and educate farmers about their responsibilities regarding water use and operation and maintenance of irrigation and drainage systems. Local participation events may include:

• Organize farmer meetings with the Directorate of Water Resources to educate them about water allocation laws and their due share of water.
• Work with farmers to remove all unauthorized pumps and pipes especially for fish ponds.
• Discussions about needs and options for developing a mechanism of water pricing (pricing mechanism on volume basis instead of area basis) to improve water use efficiency and control unauthorized water extraction.

Output 1.2.3. Lessons learned and best practices on climate change adaptation are shared.

The project will carry out specific activities to capitalize on experiences and good practices in order to transform them into knowledge and evidence that can inform national policy discussions. The dissemination of the generated knowledge will be an integral part of the PMT prerogatives which will pay particular attention to adapting the messages and the means of their dissemination according to the target audience. This will include the organization of workshops and seminars on issues specific to saving of efficient irrigation technologies, conservation agriculture, IPM practices, technology transfer and adaptation to climate change. Successful experiences will be carefully documented to serve as a source of information and guidance in the development and planning of scaling up projects in Iraq. The project will package and disseminate information to the respective stakeholders in the appropriate formats (e.g. brochures, studies, articles, newsletter, and web). This knowledge-sharing process would be supported by a well-focused series of workshops and joint learning events and visits.

Component 2. Climate-resilient agriculture investments.

This component will support investments in climate-proof water infrastructure, early warning systems, and sustainable agronomic and animal production systems and technologies, in line with the 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. The construction/rehabilitation of water infrastructure, and introduction of suitable agronomic systems and technologies, such as conservation agriculture and efficient irrigation technologies, will help compensate the predicted increase of water deficit and evaporation due to CC predictions, favouring better soil moisture storage and retention capacity, and optimal use of irrigation water, while ensuring a more stable and improved production, and preventing major environmental problems such as salinization and soil erosion. The rehabilitation/construction of infrastructure and supply of equipment for post-harvesting and marketing will provide income diversification opportunities and will help reduce the perishability of produce, thus reducing the risk of loss of production due to climatic shocks.

IFAD support to Iraq through grant financed regional agriculture research projects implemented by ICARDA, as well as other IFAD investment projects in the region, have provided key lessons that can prove relevant to this outcome: (i) given small scale farmers are risk averse, incentives to pay for the first year the cost of incremental inputs and services embodied in the new technologies they are willing to adopt, are essential to help taking risk; (ii) the sustainability of impact generated by past IFAD investment projects beyond the completion date require government commitment to continue funding technology transfer activities and beneficiaries' ownership to operate and maintain the collective assets created by the project.

Outcome 2.1. Irrigation water supply infrastructure in the target cultivated lands is improved based on modern climate-proof technologies.

There has been little investment in irrigation infrastructure 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. The issue is critical in many of the Governorates such as Muthana where some of the villages visited by the project design mission indicated that they could not cultivate their land anymore due to scarcity of water. The households in these villages were suffering acute food shortages and women and children were particularly under nourished.

Innovative irrigation conveyance and drainage technologies can enhance water use efficiency, gaining an economic advantage while also reducing environmental burdens, such as soil erosion, soil salinity, flooding, and pollution. Investments in irrigation and drainage infrastructure, together with the provision of institutional development support for water users' associations, and training/financial support on the adoption of climate-resilient micro-pressurized irrigation technologies, will provide farmers with adequate means and incentives to know crops' water use, actual irrigation applications, crops' yield response to different water management practices, and thus current on-farm water-efficiency levels.

There is potential in many of these Governorates to invest in irrigation infrastructure that was left incomplete by the Government due to its financing constraints and the political instability in the country over the last two decades. With relatively little investment, some of these schemes can be completed and others rehabilitated to ensure the supply of water to many of the villages in these extremely fragile districts.

Output 2.1.1. Efficient water supply from tertiary canals up to farmland plots is secured, based on climate-proof systems and technologies.

Water irrigation schemes are one element of an overall river basin or watershed system, with multiple objectives competing for limited land and water resources. Regardless of the efficiency of farm-level irrigation practices, reliable water delivery structures and adequate collection and disposal/reuse of drainage effluent are crucial to ensuring the sustainability of crop production systems (e.g. prevent water losses, remove or otherwise control excessive water on cropland, improve soil aeration, avoid pollution through nutrient/agro-chemicals effectiveness and transport, and avoid onsite and offsite environmental challenges such as salinity, erosion and siltation). Therefore, technology choices in irrigation infrastructure design and investment, particularly in regards to alternatives for efficient water delivery and control, should respond simultaneously to different needs: (i) coping with the effect of CC on runoff and water supply reduction, and outflow requirements to meet ecosystems and other uses' needs; (ii) effective reduction of conveyance losses; (iii) Farmers' requirements for agriculture production and how selected technologies will be operated and maintained reliably, efficiently and equitably; (iv) cost-effectiveness of selected technologies.

Considering the fragmented information on irrigation and drainage infrastructure in Iraq, the project will undertake an assessment of the actual status of the irrigation and drainage infrastructure in the 4 target governorates where irrigated agriculture occurs, to determine key limitations influencing irrigation delivery, irrigation management, and disposal of the drainage effluent. This study is undertaken with the collaboration of the irrigation, water management and agricultural extension departments in Iraq. The study will use data of irrigation network at project and farm level (irrigation channels/outlets, current irrigation systems and their extent), quality of irrigation water at the farm, irrigation practices, depth of groundwater, quality of groundwater, features of drainage systems (structures, depth of drainage network, efficiency, drainage type, expected life, and drainage maintenance system), collection of drainage effluent, quality of the drainage water, disposal and/or reuse options of the drainage effluent, and cropping system. The study also aimed at highlighting the key deficiencies in the system that contributes to soil salinization and low land and water productivity. The resulting information will finally be used to draw investment plans for improving the drainage infrastructure.

The project will facilitate grant funding to the public administration (Directorate of Agriculture and Directorate of Water Resources) and WUAs to address short-term rehabilitation needs in the irrigated perimeters where the conveyance canals to the farm gate and the drainage system are functional. Eligible rehabilitation works will include among others: (i) the cleaning of branch canals from plants and sedimentation, (ii) the rehabilitation and/or substitution of conventional drainage with close conduits; (iii) the adoption of climate-proof, efficient and cost-effective technological options (e.g. underground conveyance systems; lining canal with concrete smart ditches; gated pipes; solar pumping; etc.) for the rehabilitation of the water conveyance network from tertiary canals to farmland plots that meet CC-adaptation and water users' needs in the target areas.

It is estimated that given the resources available from this output and the IFAD SARP baseline project, around 33,250 dunums[22] or 8,130 hectares can be irrigated. These schemes would be identified by the Governorates in close coordination with the Directorate of Agriculture and Directorate of Water Resources in each Governorate. A preliminary list of schemes has already been developed and would be finalised prior to project appraisal by the Governorates.

Outcome 2.2. The national agro-meteorological monitoring network is upgraded informing early-warning systems.

Climate Change poses a growing threat to the agriculture sector especially because of its impact on the length of the growing season, reduction in precipitation and increasing water scarcity. Several official documents (e.g. the emerging national programs being carried out by the Ministry of Agriculture; the INC) call for strengthening the capacity of monitoring, forecasting and disseminating early warning information about climate-risks affecting agriculture development. This will imply: (i) the upgrading of the national agro-

[22] In Iraq 1 dunum is equal to 0.25 hectare.

meteorological monitoring network; (ii) the development and adoption of early warning prediction systems to forecast the impact of future climate change on agriculture production, inform farmers about risk reduction options, and support preparedness and response plans.

The Project will address these recommendations by supporting the MoA in the installation of weather stations complementing the already existing network, the installation of soil moisture-seeking equipment, and the development of a preparedness and contingency planning system to help improve long-term forecasting and enhance the capacity of all concerned stakeholders to cope with and respond to climate change related hazards, through a better planning of the agronomic activities and early warning information for a better protection of production against the risks of climate change and variability.

Output 2.2.1. The agro-meteorological network is upgraded and meteorological information management system is developed.

The Ministry of Agriculture has established an Agro-meteorological Monitoring Network (AMMN) in Baghdad with a set of remote weather stations with communication via EUMETSAT Satellite installed across the country, and two receive sites to collect data in the central locations of Baghdad and Erbil. The system measures wind speed and direction, solar radiation and sunshine hours, barometric pressure, etc. Some of the parameters also include dew point, precipitation, soil temperature, soil moisture, leaf wetness and evapotranspiration. Currently, 15 stations are out of service, 36 stations are working, and 9 new stations are planned. The project will support the Ministry of Agriculture for upgrading the receive system and the stations out of service, and installing an additional six remote monitoring stations needed for providing greater resolution in the data.

There is a team of young technical specialists working on receiving and analyzing the data. The team will receive training (Output 1.1.2) regarding the operation, maintenance, troubleshooting and installation of the system, to strengthen their programmatic and analytical capacity. The project will also support the MoA in developing an effective information management system to turn agro-meteorological data into useful information that responds to the needs of farming communities and improve early dissemination to facilitate farmers' decision making processes. By doing so, the project will help evaluate the current impact of the information and the information delivery system, asking to the end-users questions on how accessible the information delivery system is, how timely and helpful the information is, and what improvements could be introduced into the system. The outcomes of the assessment will help design a more effective and user-friendly information management system, while also selecting the most effective dissemination outlets for both broad-scale and targeted dissemination, among tools such as radio, television, newspapers, bulletins, specialized information networks and web sites.

Output 2.2.2. Early warning systems developed.

The project will operate in those governorates where poverty is among the highest in the country (ranges between 41% and 51%) and the level of economic/business activities in rural areas is the lowest. The main target group of the early warning system would be vulnerable smallholder households engaged with crop/livestock production and poor households who have been forced out of agriculture due to lack of access to adequate water, as well as women-headed households and youth interested in undertaking enterprises and income generating activities.

The project will provide technical Assistance for the set-up of contingency planning systems for weather and hazard (e.g. drought, flood risk) prediction, including: (i) the availability of timely and reliable information integrating climate forecasting, crop/pasture simulation modelling, and agronomic information, on which to base decisions; (ii) policies and institutional arrangements that encourage assessment, communication, and application of that information; (iii) a suite of appropriate risk management measures for decision makers and land practitioners. The early warning system will provide policymakers, technicians, land practitioners, farmers organizations, herders and other rural stakeholders with the most up-to-date and accurate information available on meteorological-related risks, so that appropriate cropping and livestock management strategies can be timely adopted, and disasters can be minimized or avoided. The system will deliver recommendations on how to reduce climate risks for agricultural sector and increase the resilience of the project beneficiaries in the 4 target governorates.

The systems will deliver information to better plan and select production measures, such as: (i) the accurate irrigation scheduling that reduces the cost of irrigation and minimizes problems related to the misuse of water; (ii) early pest and disease forecast and warnings to allow suitable time for taking necessary actions to avoid chemical spray; (iii) proper calculation of sowing dates to help ensure uniform plantation and reduce the cost of sowing seeds in several crops; (iv) pasture growth models to help estimate quantity of pasture according to climate forecasts and assist early decision making in relation to stock numbers and pasture availability and quality.

The project would assist in the analysis and dissemination of the information relevant for the extension centres, research stations and farmers, so that the farmers can benefit from an early warning system. In developing the early warning system, the project would assist the Agro Meteorological Monitoring Network to work closely with farmers to understand how they assess and identify changes in weather patterns, growing seasons, planting and harvesting dates and other information useful for them. The system will propose effective dissemination mechanisms for farmers to get access to the necessary information on time, by using radio, television and SMS instant messaging to support decision-making in the planning and management of the crop production, livestock production, sanitary and veterinary, etc. This will be coupled with a capacity building program to prepare institutions (strengthen the programmatic and analytical capacity of the team at the Ministry of Agriculture in charge of the Meteorological Monitoring Network and early worming system: Output 1.1.2) and beneficiaries (Training of trainers among governmental staff, researchers, lead farmers, and NGO members to

raise awareness of, and transfer know-how to practitioners: Output 1.1.3) in of in the implementation and use of the system.

Once the early warning system is established and the project is advanced on income generating activities, it will be possible, closer to the project midterm cycle, to identify private sector players from the project target groups to be involved in ensuring the sustainability of the system. This will be done once the mapping exercise of private sector partners has been finalized.

Outcome 2.3. Climate-resilient agronomic systems and technologies adopted by target farmers and producers' organizations.

The BRAC will promote climate proof the IFAD SARP baseline project interventions on crop and animal production to enhance the productivity of high value crops and livestock, and support the development of new tools and products for effectively reaching out to small-scale farmers and providing them with specific packages to have an effective impact on the adoption of climate-resilient productivity enhancing technologies. This Outcome will enable beneficiaries and farmers' associations to acquire the necessary machinery, tools and equipment, and get support for the effective their effective use in the conversion towards a climate smart agriculture production, processing and marketing.

Output 2.3.1. Small grant packages allocated to groups and association of women for climate-resilient agriculture investments, including production, post-harvesting, processing and income diversification equipment and infrastructure.

Though Iraq is categorized as an upper middle-income country, decades of conflict and mismanagement have marginalized the rural areas, and small-scale farmers are considered to be one of the poorest and the most vulnerable segment of the Iraqi population. Due to prolonged sanctions and war, farmers who will be targeted by the project severely lack capital, technology, and skills. The small grant packages that will be provided by the project are vitally needed as project beneficiaries embark on the enormous task to rebuild their livelihood. Shifting from grants to micro-credits at this stage of engagement with project's beneficiaries would slowdown the pace of their recovery and could endanger the sustainability of the project. Moreover, the most vulnerable groups, and mainly women, women headed households and internally displaced households, are indebted and at this stage, a grant will be the most sensible solution to ensure that their livelihoods are improved. Even with the loan investment project that IFAD is providing to Iraq, the Government has decided to provide it as grants to the most vulnerable communities.

The project will stimulate private investment by smallholder farmers, women and men associations and cooperatives to shift from conventional to climate-resilient production, post-harvesting and processing technologies through a coordinated use of grant funding for innovative "early adopter" investments.

The start-up packages could include equipment and assistance for assets and other needed inputs identified on a demand-driven basis by the smallholder men and women farmers and their groups or associations. Examples of potential investments are: efficient micro-pressurized irrigation equipment; small greenhouses for high value vegetable production; fisheries and livestock production equipment; equipment for beekeeping and the processing of bee products; post-harvesting cold storage equipment to reduce the perishability of the produce; processing equipment such as solar drying. All investments in post-harvest and processing facilities would be those which can be managed by the groups such as collection centres, sorting, grading and packing houses or basic processing and storage facilities. The project would in each case assist the farmer organizations and other groups develop a plan that shows the management requirements and the types of user fees to be levied to run the operation on a sustainable basis. Those operations which are complex and beyond the capacity of community organizations to undertake would be left to entrepreneurial individuals or the private sector.

The beneficiaries would be given an asset and other needed inputs under this Output. The value of the asset and inputs would, on average, be around USD 1500 per person or USD 10,000 for groups or associations. The upper limit could be relaxed if justified by a higher number of beneficiaries. Beyond this limit the beneficiaries would have to contribute their own funds in cash or kind. It is expected that the project – both AF and SARP baseline project - would benefit around 7400 households to get a productive asset that would increase their incomes on a sustainable basis.

By offering small grants to incentivize early adopter investments, the project will help to demonstrate profitable investment opportunities within selected agriculture production activities that can then be replicated and scaled-up by other farmers and businesses with greater confidence and a better understanding of likely risks and returns.

Small grants will be made for "early adopter" and/or innovation investment in primary production and post-harvesting technologies by smallholder farmers and producer groups. In line with IFAD recommended practice (IFAD, 2012), grants will only be made to early adopter and innovative investments that would also be profitable if financed through mainstream credit sources, but where investments have not yet been forthcoming under current market conditions.

Grant proposal will be sourced through periodic public calls for proposals and by invitation from the project or referral from project partners at any time. Grants must form part of a sound overall investment plan for the concerned business or farm and grant disbursement will be subject to financing being secured for the overall investment plan (not just the elements financed by the grant).

The project team will define eligibility criteria for grants available for climate-resilient production technologies, including: (i) Eligible investments criteria: farm investment plans related to climate smart primary production and post-harvesting management (e.g. micro-pressurized drip/sprinkler irrigation equipment; solar pumping equipment; conservation agriculture and organic agriculture equipment; greenhouse infrastructure

and equipment; integrated pest management inputs; nursery equipment for seeds and seedlings; plant material, with special focus to water-efficient or drought-tolerant, salt-tolerant food/fodder crop species and varieties; animal material with special focus on drought-adapted breeds; post-harvest equipment, such as cold storage, solar drying and dehydrator; etc); (ii) Eligible grantees criteria: individual small farmers, associations or cooperatives with a maximum of ha of irrigated and/or rain-fed land; the project will aim to have a percentage of grants going to women and youth unemployed; (iii) Grantee contribution criteria: percentage in cash or in-kind. The terms and conditions for the grants will be included in an implementation manual.

Special efforts will be made to encourage women and youth to apply for grants. The project will implement a beneficiary outreach campaign, providing information to potential beneficiaries about the climate-resilient agronomic systems and technologies and the opportunities to get financial support to adopt them. Each interested applicant will receive support for the selection of the most suitable technology based on the agro-climatic conditions of its farmland plots, and for the planning and implementation of its production activities.

The Project Implementation Manual *(PIM) Chapter 4: "Guidelines for Investments in Infrastructure, Training and Grants under the Project"* will have the purpose and objective to identify the criteria for the selection of all types of infrastructure and provision of grants to individuals and groups building on the initial criteria given in the different components. It will identify the selection criterion for each of the project components specifying by gender, youth and women headed households, landholding size, herd size and other proxy indicators for income and asset ownership. PIM will be developed during the inception phase of the project.

The lessons learned will be used for the release of communication tools including climate resilient agronomic systems and technologies, and will feed and inform the policy work of the IFAD SARP baseline project, facilitating the mainstreaming of good practices and lessons learned into strategic documents, papers, and work plans.

B. Describe how the project / programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project / programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy of the Adaptation Fund.

The project is expected to deliver a set of targeted and interlinked environmental and social and economic benefits. BRAC financing will enhance the adaptive capacity of the most vulnerable rural people in the target governorates to address climate change and its potential impact on the agriculture sector by focusing on adaptation measures that improve the conservation and management of scarce/threatened key resources - namely efficient provision of irrigation water and effective soil conservation measures for

soil water storage and fertility - reduce environmental risks, increase yields and create opportunities for income diversification. The project will aim at covering the additional costs throughout IFAD SARP baseline interventions associated with: (i) the investments in management systems and technologies for climate-resilient efficient irrigation and conservation agriculture; (ii) the adoption of climate-resilient methods and technologies for the rehabilitation and modernization of on-farm irrigation conveyance and drainage infrastructure, (ii) the training of trainers and on-farm demonstration trials to raise awareness and build the capacity of farmers on adaptive agricultural production, post-harvesting and marketing, and (iii) the institutional development of policy makers and water users' organizations for mainstreaming CC adaptation.

A synergistic approach will be adopted between SARP and BRAC by identifying opportunities to introduce climate-resilient, modern technologies for efficient water distribution to reduce conveyance water losses and drainage problems between the channels and the farmland plots, adopt modern low-cost technologies for water measurement and introduce new renewable energy pumping technologies. Synergies will also occur in the fields of capacity building and stakeholders' participation to jointly identify and demonstrate suitable adaptation measures and technologies, regulatory and operation solutions - such as the options to involve water users' organizations in irrigation water services.

Vulnerable groups expected to benefit from this project include:

The project will operate in those governorates where poverty is among the highest in the country (ranges between 41% and 51%) and the level of economic/business activities in rural areas is the lowest. In the target governorates, small-scale farmers and livestock producers are the most marginalised households with unemployed young men and women the most vulnerable. The rural unemployment rate is higher for females than males. Due to years of war and political instability, 10 percent of households are headed by women, most of them widowed, but many of them divorced, separated or caring for sick spouses. They represent one of the most vulnerable segments of the population and are generally more exposed to poverty and food insecurity as a result of lower overall income levels.

The target group of the project will be the smallholder households engaged with crop and livestock production, poor households who have been forced out of agriculture due to lack of access to adequate water and soil degradation, women-headed households and IDPs interested in undertaking productive activities and youth interested in undertaking enterprises and income generating activities particularly centred around agriculture and the ancillary services critical to support agricultural growth. The project would also target special population groups like the marshland Arabs, suffering severe poverty, lack of clean drinking water and sanitation, health care and education facilities, who were obliged to abandon rice cultivation and are currently engaged with fisheries, livestock and hunting in the wild to eke out a meagre livelihood. Women are in the forefront in the marshlands, and actively participate in dairy and fish marketing.

The project design was assessed through the social, environmental and climate assessment procedures (SECAP) of IFAD, which are fully aligned with the AF Environmental and Social Policy. The following table describes key social, economic and environmental benefits provided by BRAC:

Benefit areas	Key benefits	Baseline scenario
Social	The project investments in irrigation water provision up to farmland plots and efficient water conservation and use, will facilitate farmers' return and make productive the abandoned lands. Capitalizing on the Government opportunities for the unemployed rural youth, the project will develop the skills of the targeted women and youth to increase their marketability and assist many of them to establish their own enterprises and income generating activities with support from the project in acquiring productive assets.	smallholder households engaged with crop and livestock production are more and more forced out of agriculture due to lack of access to adequate water and soil degradation. Among them, the various conflicts have significantly limited women and young people's educational and employment opportunities.
	The project will establish partnership and hire services from local NGOs (e.g. "daughter of the Marshes") to raise the skills of women, who lead agriculture production in the marshes, and unemployed youth dealing with fishing and buffalo breeding, to empower them and support their adaptive capacity on agriculture production and business development. The project will create synergies with UNICEF which is providing complementary social sector services to the people of the marshlands	Marshland communities suffer from severe poverty, a lack of clean drinking water, health care and education facilities
Economic	Target smallholder farmers with the necessary equipment and skills to apply climate-resilient production systems and technologies will increase yields (10-45%). In the case of sub-surface drip irrigation in date palm production increase can range between 30-70%. Livestock extension and health services, crop-livestock integration and the use of alternative animal feed	Decreasing water supply, the use of maladaptive agriculture practices leading to land degradation, and the limited access to modern equipment and finance, have a negative impact on crop yields and farmers' income.

	resources, will increase livestock stock (increased twin rates from 5% to 24%), milk production per ewe and decrease mortality by 47%. The poor and/or indebted most vulnerable groups (especially women, women headed households and internally displaced households) will benefit of grant funding that will be the most sensible solution to rebuild their livelihoods.	
	Target farmers applying best practices on soil salinity management will increase yields more than 80% and their income per hectare.	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.
Environmental	Target smallholder farmers will acquire the necessary equipment and skills to apply efficient irrigation and soil & water conservation technologies in their farmland plots. This will significantly reduce the use of water (>30%), and water productivity in terms of kg of product per m3. Subsurface drip irrigation in date palm production reduce even more the overall water use by 50% compared to sprinkler system and 30% compared to surface drip irrigation.	Decreasing water availability has been exacerbated by the higher frequency and intensity of drought events, which have devastated agriculture and caused drinking water shortages, particularly in rural areas.
	Target smallholder farmers with the necessary equipment and skills to make a combined use of drip irrigation, crop rotation, mixing of crop residue, mulching, deep plowing, and local open drain, will reduce significantly soil salinity problems between 50-70%.	Diminished water availability together with low irrigation efficiency have increased soil salinity.
	Target date palm producers with the necessary equipment and skills to apply integrated pest management and organic fertilization will significantly reduce water pollution and	The excessive use of chemical fertilizers contributes to enhance the process of eutrophication of surface and underground

	pest/diseases problems, while having an incremental return of USD 8440 per ha.	water courses, and the proliferation of diseases and parasites, whose development is more on excessively fattened crops with nitrogen.

c. Describe or provide an analysis of the cost-effectiveness of the proposed project / programme.

The project is mainly investment-oriented with a view to maximize the impact in a cost-effective manner. The proposed adaptation technologies to be implemented by the project have been tested by the National Agricultural Research System (NARS) and other partners (e.g. ICARDA, FAO) through several regional agriculture research for development (R4D) projects (some co-financed by IFAD grants inclusive of Iraq), and demonstrated their effectiveness in enhancing resilience to climate change, agricultural productivity, as well as the sustainable use of natural resources. Thus the investments have relatively secured results and the fund is not being used on testing technologies with unknown effectiveness.

Beneficiaries: BRAC and the IFAD baseline SARP together are expected to benefit about 16,000 households directly. This number avoids double counting, as those who receive assets are also likely to receive training and skill development, and agro-meteorological and EWS services. This translates to 110,400 people based on the rural household size of 6.9 people. The cost per beneficiary is calculated to be USD 288, including the government and beneficiary in-kind contribution.

The **quantifiable benefits** include the following: It is expected that around 33,250 dunum or 8,322 hectares would benefit from improved irrigation infrastructure. High value crops would be grown and with capacity building on irrigation efficiency, cropping intensity is projected to increase by 15%. An increase in irrigation efficiency from 35% to 75% has the potential to increase crop intensity from 85% to 130% targeting high value crops and vegetables and also provide improved irrigation for date production. Available reports show that for water use efficiency, supplemental irrigation in rain-fed areas resulted in higher yield, increased water productivity from 0.96 kg to 3.7 kg of grain per m3 of water, prevented excessive use of water, and modified the crop calendar considered as an adaptation measure to climate change. Irrigation through mechanized raised bed technology increased wheat productivity while saving on water resources - applied water was reduced by 30%, yields increased by 25%, seed rate reduced by 50 %, and on-farm water use efficiency increased by 72%. Taking into account all factors, the project design team has computed that incremental income per ha would be ID 168,000 in the first year of irrigation increasing to ID 280,000 per the third of irrigation as the efficiency improves.

Table: Irrigation efficiency and crop intensity targets

Irrigation system (IS)	Targets	
	Irrigation efficiency	*Crop intensity*
Current conventional surface irrigation system	35%	85%
Improved traditional surface irrigation system*	45%	100%
Advanced surface sprinkle irrigation system	60%	115%
Localized/drip irrigation system	70%	130%

*Raised bed technology

The project proposes to introduce crop varieties and use of production technologies that are better adapted to climate change. In saline areas, the project would introduce wheat and fodder varieties that have demonstrated their tolerance to high levels of soil salinity. The project would also introduce high value vegetable production through providing support for establishing green houses, apiculture, fisheries, IPM for dates and other crops, provision livestock packages for women, assets for men and youth that would help them engage more effectively in agriculture production or providing the support services to the agriculture and rural sector. The project also support investments for the establishment of post-harvesting and processing facilities such as grading packaging, cold storage, among others, that will help diversify production and reduce the perishability of the produce.

The project will strengthen the institutional capacity of the Government to plan the agriculture sector under a climate change scenario, improve policies, propose effective adaptation measures, and monitor and report on their application. The project will help upgrade the agro-meteorological network and develop an early warning system that will help farmers to take appropriate mitigation and adaptation measures to deal with the predicted higher frequency and intensity extreme weather events, such as drought, and associated problems (e.g. increase of pests, water salinity).

The project implementation will heavily rely on existing Government structures, and will be fully embedded in the IFAD SARP baseline project. This approach is believed to be particularly cost-effective, as it reduces the need for higher execution costs that would need to be spent on both staff and consultants, while building the capacity of the government system for ongoing and more widespread implementation of similar climate-resilient interventions. The size of the project management unit (PMU) has been carefully considered in order to keep costs down while still ensuring effective management of the project. The PMU staff will be selected from national experts and existing government staff.

The cost-effectiveness of the project components is further elaborated in the table below:

OUTCOME	Cost (USD)	Nº of beneficiaries	Losses averted/Benefits generated	Alternative to Project
1.1. Increased capacity of governmental staff on mainstreaming CC adaptation into the agricultural sector	264,000	300 people	Key staff at governmental institutions (MoA, MoHE, MoWR), extension organizations and NGO will have the capacity to assess, plan and monitor CC adaptation needs and measures. The CC Adaptation Strategy will become a policy document guiding future plans and policy improvements for mainstreaming CC adaptation at cross-sectorial level. A critical mass of "trainers" at the central and governorate levels will be established for ensuring assistance on CC adaptation to farmers beyond the project life.	Under current scenario decision-makers have limited capacity to assess CC impacts and plan suitable adaptation measures for the different agro-climatic conditions of the country. Knowledge transfer on CC adaptation systems and technologies to extension agents, civil servants and NGO staff is very limited so that they cannot provide adequate services to farmers.
1.2. Technical and institutional capacity of agriculture practitioners and producers' organizations in the 4 targeted governorates developed to integrate knowledge on climate-resilient systems and technologies into practice	220,000	16,000 HH[23]	Farmers will be acquainted to new technologies enabling them to cope with climate change, and preserve their production. These technologies are also tools to prevent soil salinity and minimize inputs (water, fertilizers, herbicides and pesticides) and thus reduce the cost of production up to 30%. Products will be less subject to climate impacts, and to pesticide residues, which increases their competitiveness on both local and international market.	Farmers rely on surface irrigation, which will increase water and nutrient losses, weeds infestation, labor for land preparation. Water provision is unsecured and not continuous, causing much lower yields, and crops becoming more vulnerable to climate change. The cost of production is higher. The use of chemicals and machinery for plowing will increase GHG emissions.
2.1. Climate-proof systems	5,240,000	6,650 HH	Funds for irrigation development will address	Most of the irrigation canals are

[23] HH: household

and technologies for water supply from tertiary canals up to farmland plots are implemented in the target governorates			about 8312,5 ha on a total of 145,750 ha in the Governorates. On average an investment of USD 1200 per hectare is foreseen (USD 300/dunum). Currently rehabilitation is foreseen in 2 Governorates; with an estimated investment cost of USD 2 M to USD 2.5 M per scheme a total of 4 to 5 schemes can be implemented under joint BRAC and SARP, with an average size of 1,600 to 2,100 ha. Climate-proof irrigation infrastructure and equipment will increase water use efficiency and continuous provision to farmers. The development of institutional capacity and skills of WUAs will ensure sustainability in the long-term management of water resources.	in a state of disrepair and most of the drainage canals are non-functional as a result of poor maintenance. Water use efficiency both at the conveyance level and on farm level is low and ranges from 35% to 40%. The quality of water poses another problem as the underground water is brackish and the level of salinity in the water has gradually increased over time. Water User Associations were established sporadically but there is little tradition for these to assume the responsibility for operation and maintenance of the infrastructure.
2.2. The national Agro-meteorological Monitoring Network is upgraded informing early warning systems	729,000	16,000 HH. Additionally, all farmers of Iraq will benefit from the upgrading of the agro-meteorological network and early warning system. The decision makers, extension agents, agro-businesses and other market players, are	The losses averted are those related to the impact of adverse climate effects on crops (i.e. drought, heatwaves) that can be avoided through early warning. Moreover, the system enabling the prediction of pest and disease infestation as well as water demand, will minimize the damages on crops, and increase the resilience of farmers to climate change. The system is also a mean to reduce the cost of compensations paid to farmers subject to climate adverse every year.	Farmers will be under higher uncertainty about climatic risks exacerbated by climate change. Losses will be amplified due to lack of capacity for preparedness and reaction to pests and droughts; systematic spraying of chemicals will increase the cost of

		also benefiting from the system.		production and pollution. Budget allocated for relief will be amplifying the burden of debt of the state.
2.3. Climate resilient agriculture technologies adopted by target farmers and producers' organizations	2,303,000	9,350 HH	Supplemental irrigation in rain-fed areas resulted in higher yield, increased water productivity from 0.96 kg to 3.7 kg of grain per m^3 of water, prevented excessive use of water, and modified the crop calendar considered as an adaptation measure to climate change. In addition to environmental benefits, shifting from chemicals to bio-pesticide for the date palm Dubas Bugs resulted in an incremental return of USD 8440 per ha on date palm production. Integrated crop-livestock production systems helped spread the risk and increase revenues. The application of holistic packages to improve sheep flocks' reproductive performance resulted in an increase of 55% to 80% of fertility rates and increased twinning rates from 5% to 24%. The reduction of winter-feeding gap by increased production of forage during the shortage period, not only released the pressure on natural rangelands, but also increased milk production by 15% per ewe and decreased mortality by 47%.	Farmers can still rely on surface irrigation; this will increase water and nutrient losses, soil and water salinity problems, weeds infestation, higher labor for land preparation, weed control and for irrigation. The cost of production is higher. The use of chemicals and machinery for plowing will increase GHG emissions.

Direct Project Beneficiaries. The Project would target approximately 33,250 dunum or 8,322 hectares to benefit from improved irrigation infrastructure. Assuming an average farm size of 5 dunum per HH, about 6,650 households would benefit from the project irrigation investments. An additional 9,350 households would benefit from the grant packages programme, giving a total of 16,000 beneficiary households. All 16,000 HH will benefit from agro-meteorological and EWS information, and from the training activities on climate-resilient agriculture systems and technologies. Given an average household size of 6.9 people, the total number of people benefiting from the project would amount to around 110,400. Additionally, 300 staff from MoA, MHE, research and NGO will benefit from training support on technical and policy development issues for climate change adaptation and climate risk reduction. The total number of SARP beneficiary households expected over the years is broken down in table 4.

Table: Direct Project Beneficiaries

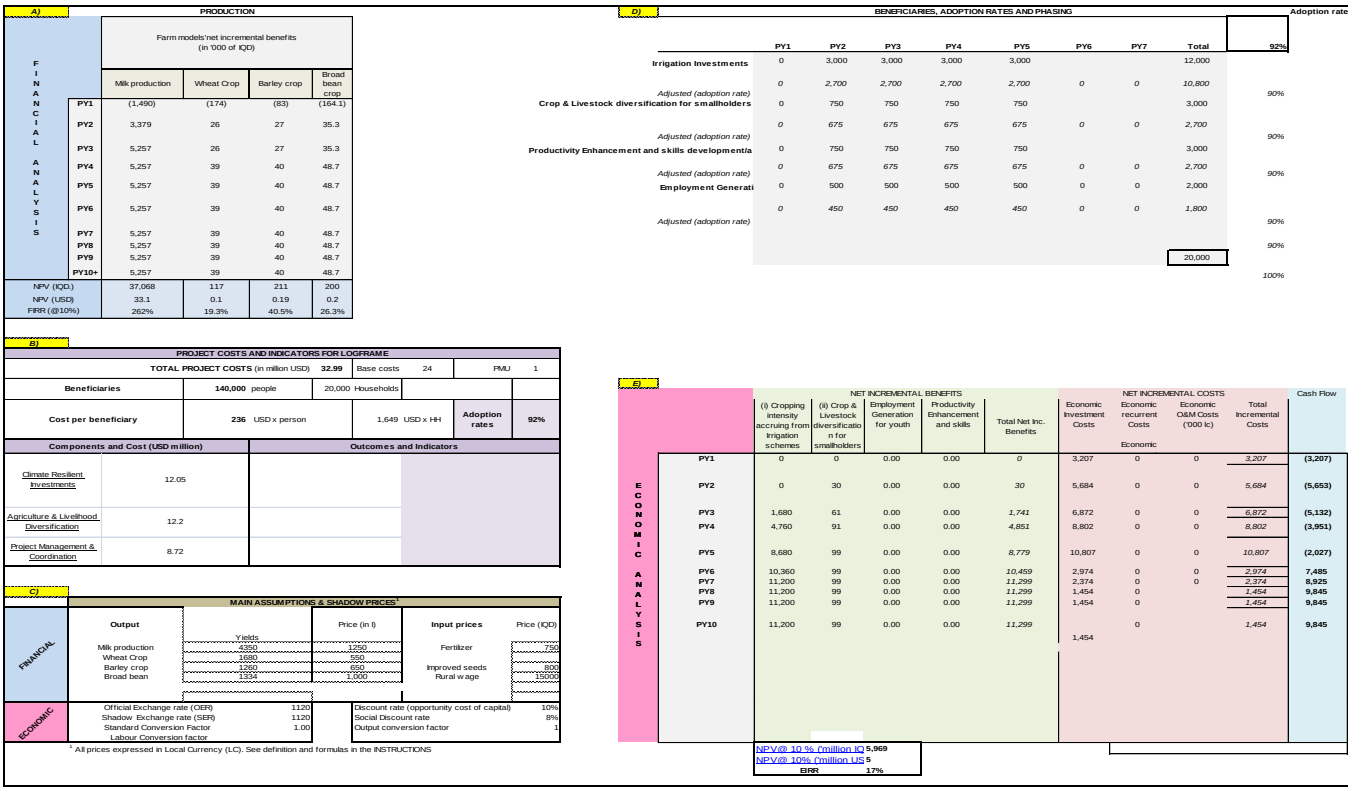
Component	Estimated number of benefitting households (HHs)
Grant packages for smallholder farmers, youth and women, and farmers organizations	9,350
Irrigation modernisation and water supply to farmland plots For estimated 33,250 dunum	6650
Total number of HH	16,000

Net Present Value (NPV) and Economic Internal Rate of Return (EIRR). The net present value of the project over a ten-year period is calculated to be ID 5.9 million and the economic internal rate of return is estimated to be 17% at a discount rate of 10%.

Sensitivity analysis: A sensitivity analysis was conducted to assess the changes in NPV and EIRR due to variations in the future benefit stream of costs or delay in project implementation. The Project remains profitable under a wide range of project scenarios as shown below:

SENSITIVITY ANALYSIS (SA)				
	△%	Link with the risk matrix	IRR (%)	NPV (USD M)
Base scenario			17%	5.33
Project benefits	-10%	Yield levels declines	17%	16.69
Project benefits	-20%		15%	12.27
Project costs	10%	Unforeseen factors that increase costs	18%	19.27
Project costs	20%		16%	10.24
1 year lag in ben.		Risks related to low start-up implementation capacity, staff turn over, many other public instututions involement	16%	16.49
2 years lag in ben.			14%	12.21
Output prices	-10%	Overproduction coupled with the weak marketing infrastructure	17%	16.40
Output prices	-20%		15%	12.10
Input prices	10%	Market price fluctuations	16%	9.80
Input prices	20%		14%	11.50

Overall computation of the Economic Rate of Return



A) PRODUCTION

FINANCIAL ANALYSIS

	Farm models'net incremental benefits (in '000 of IQD)			
	Milk production	Wheat Crop	Barley crop	Broad bean crop
PY1	(1,490)	(174)	(83)	(164.1)
PY2	3,379	26	27	35.3
PY3	5,257	26	27	35.3
PY4	5,257	39	40	48.7
PY5	5,257	39	40	48.7
PY6	5,257	39	40	48.7
PY7	5,257	39	40	48.7
PY8	5,257	39	40	48.7
PY9	5,257	39	40	48.7
PY10+	5,257	39	40	48.7
NPV (IQD.)	37,068	117	211	200
NPV (USD)	33.1	0.1	0.19	0.2
FIRR (@10%)	262%	19.3%	40.5%	26.3%

D) BENEFICIARIES, ADOPTION RATES AND PHASING

	PY1	PY2	PY3	PY4	PY5	PY6	PY7	Total	Adoption rate
Irrigation Investments	0	3,000	3,000	3,000	3,000			12,000	
Adjusted (adoption rate)	*0*	*2,700*	*2,700*	*2,700*	*2,700*	*0*	*0*	*10,800*	*90%*
Crop & Livestock diversification for smallholders	0	750	750	750	750			3,000	
Adjusted (adoption rate)	*0*	*675*	*675*	*675*	*675*	*0*	*0*	*2,700*	*90%*
Productivity Enhancement and skills developmenti/a	0	750	750	750	750			3,000	
Adjusted (adoption rate)	*0*	*675*	*675*	*675*	*675*	*0*	*0*	*2,700*	*90%*
Employment Generati	0	500	500	500	500	0	0	2,000	
Adjusted (adoption rate)	*0*	*450*	*450*	*450*	*450*	*0*	*0*	*1,800*	*90%*
									90%
								20,000	*100%*

B) PROJECT COSTS AND INDICATORS FOR LOGFRAME

TOTAL PROJECT COSTS (in million USD)	32.99	Base costs	24	PMU	1
Beneficiaries	140,000 people	20,000 Households			
Cost per beneficiary	236 USD x person	1,649 USD x HH	Adoption rates	92%	

Components and Cost (USD million)		Outcomes and Indicators
Climate Resilient Investments	12.05	
Agriculture & Livelihood Diversification	12.2	
Project Management & Coordination	8.72	

C) MAIN ASSUMPTIONS & SHADOW PRICES[1]

FINANCIAL

Output	Yields	Price (in I)	Input prices	Price (IQD)
Milk production	4350	1250	Fertilizer	750
Wheat Crop	1680	850		
Barley crop	1260	650	Improved seeds	800
Broad bean	1332	1,000	Rural wage	15000

ECONOMIC

Official Exchange rate (OER)	1120	Discount rate (opportunity cost of capital)	10%
Shadow Exchange rate (SER)	1120	Social Discount rate	8%
Standard Conversion Factor	1.00	Output conversion factor	1
Labour Conversion factor			

[1] All prices expressed in Local Currency (LC). See definition and formulas in the INSTRUCTIONS

E) ECONOMIC ANALYSIS

	NET INCREMENTAL BENEFITS					NET INCREMENTAL COSTS				Cash Flow
	(i) Cropping intensity accruing from irrigation schemes	(ii) Crop & Livestock diversification for smallholders	Employment Generation for youth	Productivity Enhancement and skills	Total Net Inc. Benefits	Economic Investment Costs	Economic recurrent Costs	Economic O&M Costs ('000 lc)	Total Incremental Costs	
							Economic			
PY1	0	0	0.00	0.00	*0*	3,207	0	0	*3,207*	**(3,207)**
PY2	0	30	0.00	0.00	*30*	5,684	0	0	*5,684*	**(5,653)**
PY3	1,680	61	0.00	0.00	*1,741*	6,872	0	0	*6,872*	**(5,132)**
PY4	4,760	91	0.00	0.00	*4,851*	8,802	0	0	*8,802*	**(3,951)**
PY5	8,680	99	0.00	0.00	*8,779*	10,807	0	0	*10,807*	**(2,027)**
PY6	10,360	99	0.00	0.00	*10,459*	2,974	0	0	*2,974*	**7,485**
PY7	11,200	99	0.00	0.00	*11,299*	2,374	0	0	*2,374*	**8,925**
PY8	11,200	99	0.00	0.00	*11,299*	1,454	0		*1,454*	**9,845**
PY9	11,200	99	0.00	0.00	*11,299*	1,454	0		*1,454*	**9,845**
PY10	11,200	99	0.00	0.00	*11,299*	1,454	0		*1,454*	**9,845**

NPV@ 10 % (million IQ 5,969
NPV@ 10% (million US 5
EIRR 17%

D. Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

The project/IFAD baseline goal and objectives are in line with:

1- The Iraq NDP (2013-2017) goals of guaranteeing equal gender opportunities to boost economic participation rates; fostering knowledge and skills responding to the demands of the job market; cover the needs of vulnerable groups in order to enhance social development opportunities; and achieving environmental sustainability and thereby laying the groundwork for the green economy.

2- the emerging MoA programmes for: (i) the use of on-farm modern irrigation systems; (ii) the improvement of wheat production; (iii) the development of drought and salinity tolerant crops; (vi) the establishment of an agricultural meteorology network; (vii) the genetic improvement of local animal breeds; and (viii) the use of conservation agriculture systems and technologies. The project also aligns with the MoA supportive instruments for: (i) the use of land suitability maps for the selection of crops according to

respective agro-ecological zones; and (ii) the establishment of an effective network of an early warning system for monitoring and mitigation of climate change risks.
3- The MoA objective to reverse young unemployment through the creation of job opportunities linked to maintenance of agricultural machinery, nurseries for high value plants, and feed blocks for livestock.
4- The MWR 2010 Strategy setting objectives and plans for 2035 for the sustainable use and integrated management of water resources, including updated priorities for the water infrastructure modernization/rehabilitation, and for the development sectors using water. The project also aligns with the MWR objective to support the establishment of water users' associations in the agriculture sector in order to enhance the experience of field irrigation management methods, and raise awareness and promote water use rationalization.
5- The 2009 Law on Environmental Protection, as far as its provisions for the protection of people and natural resources from water and soil pollution, and the sustainable management of natural resources are concerned.
6- The need to overcome deterioration of agriculture services and enhance the capacities of MoA, MWR, MHE and smallholder organisations, in agriculture support services such as research, extension, animal health, and adaptive agronomic and livestock management practices.
7- The need to support policy development to help increase competitiveness of the agriculture sector and enhance its contribution to rural development and poverty alleviation in a climate change scenario. In this sense, the project responds to the MHE request to develop a national strategy for adaptation to the climate change impacts, as far as the agriculture sector is concerned.
8- The enhancement of the Social Protection Net (SPN) grant programme targeting poor and vulnerable population, and the new poverty reduction initiative (2016). BRAC Component 2 will help demonstrate best practices in terms of grant funding to vulnerable groups for agriculture development.
9- The implementation of the CC adaptation priorities for the agriculture sector proposed by the INC. In this sense, the project will build on the best practices for climate-resilient agronomic systems and technologies successfully tested by the National Agricultural Research System (NARS) and other partners through several regional agriculture research for development (R4D) projects.

The project/IFAD baseline takes into consideration and builds on the interventions of donors currently active in Iraq, particularly: (i) FAO in policy development for agriculture, food security, food safety, crop seeds and animal health (ii) USAID in agriculture policy and private sector involvement in agribusiness development; (iii) ICARDA in the development, validation and dissemination of production technology packages for cereals, small ruminants and date palm; (iv) UNIDO in post-harvest and income diversification; (v) the Italian Cooperation in salinity issues, date palm value chain and buffalo genetic improvement; and (vi) the Australian Cooperation in conservation agriculture and salinity issues.

E. Describe how the project / programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.

The project aligns to the national legislation and policies on agriculture, water management, desertification, climate change adaptation, land tenure, public procurement, decentralization, farmers' organizations and unions, employment, women's rights, among others. The project responds to the 2013-2017 Development Plan agriculture development and environmental goals, and adopted principles of sustainable development, green investments, human rights, improving the quality of life, guaranteeing gender equality and job opportunities for women, and underlining the importance of collaboration and partnerships among public and private sector and NGOs in implementing the population and development programme. The project also addressed the governmental priorities for climate change adaptation included in policy documents, such as the INC to the UNFCCC, and soil and water conservation included in the National Strategic Plan for Combating Desertification (NSPCD).

In support of the decentralization policy of Government, the project would build capacity at the governorate level and support the governorates to set their development agenda. The project would also promote collaborative ways of working: between different government agencies, and between government and non-government service providers. It would also encourage more participatory ways of working, which involve rural communities themselves in planning and decision making at local level. In support of the latter agenda, the project would also invest in building the capacity and organization of the rural communities themselves, to enable them to participate more effectively in local planning processes. Even modest success in these related dimensions of 'institutional culture' would represent a major shift in the context of Iraq.

The project complies with the Environmental and Social Policy of the Adaptation Fund, (see Section K) and was assessed through the social, environmental and climate assessment procedures (SECAP) of IFAD, which are fully aligned with the AF Environmental and Social Policy.

F. Describe if there is duplication of project / programme with other funding sources, if any.

There is no duplication of the project compared with other funding sources. The project builds on the interventions of other donors in the project target areas, particularly: (i) FAO in policy development for agriculture, food security, food safety, crop seed and animal health; (ii) USAID in agricultural policy and private-sector involvement in agribusiness development; (iii) ICARDA in the development, validation and dissemination of production technology packages for cereals, small ruminants and date palm; (iv) UNIDO in enterprise development and income diversification; (v) Italian Cooperation in date palm value chain and buffalo genetic improvement; and (vi) Australian Cooperation in conservation agriculture issues.

Partnerships with international organization in the project areas will help IFAD to manage risks and enable it to stay engaged in more challenging contexts. IFAD Partnership Strategy would guide IFAD's use of partnerships in fragile situations. Partnerships with the Rome-based agencies, would be prioritized, as would partnerships with other development partners with strong implementing capacity, such as trusted civil society organizations. The project will seek partnership with UNIDO to provide support in management of micro-enterprises, with FAO in disseminating the IPM technologies for date palm and SSTC, as well as synergy with UNICEF which is providing complementary social sector services to the people of the marshlands. The project would also coordinate with IOM to identify and locate IDPs should additional funding become available to assist them. The project also envisages using the local farmer Unions, Poultry Unions and the private sector involved with vegetable marketing, dairy processing and packing and processing of dates. Partnerships with humanitarian agencies specially IOM, WHO, UNICEF, WFP, etc., and civil society are included as a key strategy for bridging the humanitarian-development gap.

The overall responsibility for coordination with development partners would be shared by the Project Management Team (PMT) in Iraq and the Governorate Coordinators. Semi-annual meetings at the Governorate level will be organized with development partners active in the project area to identify specific topics and case studies of interests which illustrate how the certain activities have had an impact on rural livelihoods. The PMT, assisted by a specialized service provider, will prepare Learning Notes, which would play an important role in broadening policy dialogue and knowledge sharing. These would be shared more widely by IFAD through its various tools for sharing the knowledge gleaned from IFAD-supported projects and programmes such as through the use of what is termed as "Learning Routes" with the objectives of valuing local knowledge and facilitating the development of platforms in which experiences are shared and as a complementary model for knowledge transfer among development partners.

G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

The compilation and dissemination of project information, experiences and results on an on-going basis are important for the country and IFAD. The overall responsibility for Knowledge Management and communication would be shared by IFAD and the PMT in Iraq. The PMT would coordinate with the Governorate Coordinators and the M&E Officers in identifying specific case studies of interests which illustrate how the project activities have had an impact on rural livelihoods. The PMT would be assisted by the project Service Providers in the preparation of special case studies and Learning Notes. These would be shared more widely by IFAD through its various tools for sharing the knowledge gleaned from IFAD-supported projects and programmes such as through the use of what is termed as "Learning Routes" with the objectives of valuing local knowledge and facilitating the development of platforms in which experiences are shared and as a complementary model for knowledge transfer among development partners.

The project will carry out specific activities to capitalize on experiences and good practices in order to transform them into knowledge and evidence that can inform national policy discussions. The dissemination of the generated knowledge will be an integral part of the PMT prerogatives which will pay particular attention to adapting the messages and the means of their dissemination according to the target audience. This will include the organization of workshops and seminars on issues specific to saving of efficient irrigation technologies, conservation agriculture, IPM practices, technology transfer and adaptation to climate change. Successful experiences will be carefully documented to serve as a source of information and guidance in the development and planning of scaling up projects in Iraq. The project will package and disseminate information to the respective stakeholders in the appropriate formats (e.g. brochures, studies, articles, newsletter, and web). This knowledge-sharing process would be supported by a well-focused series of workshops and joint learning events and visits.

H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy of the Adaptation Fund.

The project design team visited all Governorates and met with several NGOs whose mandate is to promote empowerment of rural women. These include 'Nature of Iraq' and 'Daughter of the Marshes', among others, and who are specialized in working with vulnerable communities, and mainly women, and have experience in organizing training sessions, mentoring, business training and a solid experience in targeting vulnerable households, and particularly women-headed households. The project will draw on their expertise and establish partnerships with them and with other similar NGOs for implementing project activities. These NGOs have also developed tailored training programmes in a wide range of vocations and have been undertaking very successful trainings in the Southern Governorates.

The project also met with all the Governorate elected councils, who all have a person in charge of women affairs. These representatives – who were elected by the people – will act as part of the Governorate Advisory Committees to ensure that vulnerable groups and women are well targeted.

The project will also give attention to targeting the women and vulnerable groups in the marshlands. Two of the NGOs met are specialized in working in the marshlands and have been exploring economic opportunities with the people inhabiting this fragile and unique ecosystem and world heritage site, where poverty is severe and where the local agricultural based economy is led by women and based on traditional fishing and farming, including water buffalo breeding, fish farming and dairy processing.

The project formulation team also held meetings - including a one day workshop - with representatives of the Ministry of Agriculture, Ministry of Environment, and academicians to identify the adaptation measures that BRAC will contribute to in the framework of the baseline SARP project. The MoE requested IFAD support for developing a climate change adaptation strategy for the agriculture sector, an activity that has been included in the project design. All actions assessed and considered respond to the National Communication of Iraq to the UNFCCC, as well as to Government priorities.

The Mission also met in the field with representatives of the World Bank, USAID, JICA and several NGOs in the country, as well as with several UN agencies including UNDP, UN Women, UNICEF, UNIDO, IOM, WFP, FAO and WHO, among others.

A final design workshop with participation of governmental representatives from the Ministry of Finance, Ministry of Planning, Ministry of Agriculture, and Ministry of Health and Environment of Iraq, IFAD staff, and external consultants was held in May 2017 in Amman to validate the draft project document, agree on the responsibilities that the MoA and the MoHE will assume in the different components, outcomes and outputs of the project, as well as the collaboration mechanism between them.

I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

The incremental value of the BRAC project funding will substantially expand the scope of IFAD SARP investments. BRAC demonstration actions will become models for replication and upscaling by SARP beneficiaries and the MoA across other governorates in Iraq.

The table below summarizes the added value of the BRAC intervention in comparison to the IFAD SARP baseline:

Table 5. Added value of BRAC interventions in comparison to the IFAD SARP baseline

	SARP Baseline Project	Additional benefits of BRAC Interventions
SARP Component 1: Investments in Agriculture Infrastructure	SARP will mainly support the rehabilitation, modernization and expansion of the small irrigation infrastructure networks in the 4 target governorates, to remove the bottlenecks hampering the regular access to water for agriculture production. SARP will provide training to key stakeholder staff and farmers in modern	BRAC will facilitate grant funding to incorporate climate-proof technologies (e.g. underground conveyance systems; lining canal with concrete smart ditches; gated pipes; solar pumping; etc.) for the rehabilitation of the water conveyance network from the tertiary canals to farmland plots, with the aim to cope with the effect of CC on runoff and water supply reduction, and outflow requirements to meet ecosystems and other uses' needs. Climate-proof technologies for the rehabilitation and modernization of on-farm conveyance and drainage systems will improve water use efficiency, and reduce water loss and salinity problems.

	water and irrigation management techniques.	BRAC will support the development of a climate change adaptation strategy for the agriculture sector in Iraq, including case studies in the 4 target governorates with detailed assessment of CC impacts, identification of suitable crop varieties, optimal cropping patterns and water allocation that satisfies the existing land and water availability constraints, as well as the socio-economic conditions of the target areas, and defining criteria and instruments to be used in irrigation water planning and management. BRAC will support the upgrading of the national agro-meteorological monitoring network, and the development and adoption of early warning prediction systems to forecast the impact of future climate change on water supply for agriculture production, inform farmers about risk reduction options, and support preparedness and response plans. BRAC will provide training to governmental staff, WUAs, extension agents, researchers, NGO and lead farmers on CC adaptation in water management and agriculture production.
SARP Component 2: Agriculture & Livelihood Diversification	SARP will focus on enhancing the productivity of high value crops and vegetables and other horticulture crops such as date production. The project would provide smallholder farmers, women and farmer associations and cooperatives, grants, including assistance, that would be used to establish crop, livestock and off-farm enterprises. SARP will provide training to build the institutional, technical and business capacities of the project beneficiaries, with special focus on women, youth, farmer organizations and	BRAC will provide small grants for early adopters to help demonstrate the additional value of climate-resilient production, post-harvesting and processing systems and technologies, and catalyse demand for credit funding for similar investments by SARP beneficiaries. BRAC will build on the best practices already tested and demonstrated by NARS, ICARDA, and FAO, through several regional agriculture research for development (R4D) projects to provide training to smallholder farmers on climate-resilient agronomic technologies, such as efficient irrigation technologies, conservation agriculture systems and technologies, integrated pest management, the use of salinity- and drought-resistant crop species and varieties, among others. Service providers (including extension agents, researchers, financial institutions) will be trained on the adaptation benefits of climate-

	community groups. The project will use NGOs and other service providers which will be trained on how to conduct training needs assessments to focus on specific skill gaps.	resilient production, post-harvesting and processing technologies through a ToT programme to support unemployed young women and men to establish climate-adapted and environmentally-sound income-generating activities. On-farm demonstrations will allow small farmers and farmers' organizations to exchange know-how, learn and apply climate-resilient production, post-harvesting and processing technologies, as well as effective collaborative governance systems for an efficient use of water (WUAs).
SARP Project Management Framework	SARP will have a Project Steering Committee (PSC) at the National Level which would be led by the Deputy-Ministry of Agriculture. SARP will cover the establishment of a project management team (PMT) within the MoA, that will be responsible for the overall programme coordination and implementation, and M&E functions. SARP will have a strong focus on M&E, regularly capturing results through innovative techniques, including geo-referencing.	BRAC will facilitate the participation of the MoHE in SARP Project Steering Committee to ensure effective coordination and integration of the CC adaptation and other environmental key issues into joint BRAC/SARP interventions. BRAC will cover the additional costs for a CC Adaptation Specialist to ensure the overall implementation of the Adaptation Fund activities and effective integration in the IFAD SARP baseline. Experts and service providers will be hired to provide technical support and guidance for the implementation of the different project components, and help integrate CC issues in SARP interventions and M&E system. BRAC will define and monitor climate change adaptation indicators fully embedded in SARP M&E system.

J. Describe how the sustainability of the project/programme outcomes has been taken into account when designing the project / programme.

Long-term sustainability will be sought through broad institutional development and capacity building programmes designed to create a critical mass of efficient practitioners at the governorate and national levels, and among all actors – from institutional to grassroots. The training of trainers (ToT) and FFS will be key components of this capacity building programme, that will integrate participatory elements to fully address issues that affect the long-term sustainability of natural resources and the welfare of local communities (continuous training and on-farm demonstrations to consolidate adoption of adaptation technologies and encourage replication).

Replicability will be ensured through the dissemination of lessons learnt in the field demonstration trials, and the locally adapted EIT and CA/OA management systems adopted by the early adopters through the BRAC grant schemes. The demonstration of successful results, through the use of equipment and crop/livestock varieties and breeds that are well-adapted to the local context, will also contribute to replicability.

Another important element for sustainability and replicability is the achievement of policy and legislation frameworks that are conducive to the replication and dissemination of new experiences and achievements. BRAC will feed SARP with lessons learned and best practices to help engage in a policy dialogue with all concerned decision makers and branches of the administration in order to reach the desired policy targets for mainstreaming climate change adaptation.

Climate-resilient on-farm conveyance and drainage infrastructure interventions will contribute to reduce CC-related risks and improve in the long-term water availability and efficient use.

The sustainability of the project is also guaranteed by the full involvement, empowerment and linkages among all value chain actors that the fully blended SARP and BRAC projects will facilitate. Partnerships among value chain actors will strengthen each individual actor in the chain and will facilitate the investments in climate-resilient technologies, and the production, processing and marketing of high quality products.

K. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project / programme.

The project design has incorporated compliance with national legislation and policies on agriculture, water management, climate change adaptation, land tenure, public procurement, decentralization, farmers' organizations and unions, employment, women's rights, etc. The project also addressed the governmental priorities for climate change adaptation included in policy documents, such as the INC to the UNFCCC.

The project geographic targeting has been defined on the basis of poverty rates at governorate level, with the highest scoring ones being Missan, Muthanna, Qadisiyah and Thi Qar, which form a contiguous proposed project area in the southern part of Iraq. Both BRAC and the IFAD baseline SARP fully integrate the enhancement of environmental and social resilience in the target areas, with special focus on the most marginalized households - small-scale farmers and livestock producers with highly vulnerable unemployed young men and women members - gender equity and integration of youth. The project was designed with a very proactive strategy for the participation of women in project activities especially recognizing that women have received a significant setback in Iraq due to years of conflict which has led to the deterioration of women's rights and confined many of them within the homestead in rural areas. Given the high unemployment rate among youth, the project will link with Youth associations and Unions and provide institutional, technical and enterprise training to those from among young men and women willing and committed to participate in

climate-resilient agriculture production and business development. The Project would have specific gender disaggregated targets and budget allocations, service providers with women staff to ensure outreach to women and integrate gender aspects in all reports.

The project components addressed the most important adaptation measures for the agriculture sector proposed in the INC and the emerging national programs of the MoA. The investments to be undertaken within the project will promote climate resilience and take into consideration the vulnerability of the target areas in terms of climate-risks such as drought, increased water shortage, land degradation, salinity, and pests. Investments and capacity development to help farmers shift from maladaptive agriculture practices to sustainable production systems and technologies will mitigate environmental risks, such as soil and water pollution and salinity, enhance resource use efficiency, and improve public health (e.g. increase of water quality with less pollutants and salt content; ensure food security and avoid possible malnutrition).

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law	X	
Access and Equity	X	
Marginalized and Vulnerable Groups		X
Human Rights	X	
Gender Equity and Women's Empowerment		X
Core Labour Rights		X
Indigenous Peoples	n.a.	
Involuntary Resettlement	n.a.	
Protection of Natural Habitats	X	
Conservation of Biological Diversity	n.a.	
Climate Change	X	
Pollution Prevention and Resource Efficiency	X	
Public Health	X	
Physical and Cultural Heritage	n.a.	
Lands and Soil Conservation	X	

As mentioned in CR 6, consultation was undertaken with a broad range of stakeholders, including local communities, CBOs, village councils and others to specifically define needs and jointly plan the activities that would reduce the socio-ecologic vulnerability of target communities. The design team organized 8 consultation sessions (2 in each target Governorate), where one was exclusively for women. The activities that the project will embark on are varied in nature, with irrigation, salinity control and provision of livelihood improvement packages are the main ones. The design team considered the

15 environmental and social principles that form the basis for identifying and managing environmental and social risks, and in light of the project activities, provided the following conclusions:

Compliance with the Law

The project complies with all relevant national legislation and policies on agriculture, water management, climate change adaptation, land tenure, public procurement, decentralization, farmers' organizations and unions, employment, women's rights, etc. The project also addresses the governmental priorities for climate change adaptation included in policy documents, such as the INC to the UNFCCC. To compliance, relevant authorities have been consulted during the development of the full project proposal, to ensure that no legal issues arise and that all relevant legal requirements are met.

Access and Equity

The project design ensures that planned activities will not reduce or prevent communities in the target governorates from accessing basic health services, clean water and sanitation, energy, education, housing, safe and decent working conditions and land rights. The project will also ensure equal access to training, equipment, infrastructure and services, taking especially into account marginalized and vulnerable groups, namely women, youth and marshland communities. Gender equity, integration of youth and environmental sustainability would be pursued as key cross-cutting themes in the project design.

Marginalized and vulnerable groups

Marginalized and vulnerable groups in the four target governorates fall in the categories of women and women-headed households, youth unemployed, IDPs and returnees, and communities living in the marshland areas. A targeting specialist was part of the design team, and specific activities have been developed to benefit these groups. The inception phase of the project will include the development of a detailed baseline study that will further refine these groups, identify specific activities to target them, including capacity development.

The design and implementation of project activities in the different governorates will help minimize the imposition of disproportionate adverse climate change impacts on these groups. IFAD will establish synergies and partnerships with local NGOs who are specialized in working with vulnerable communities, and mainly women, and humanitarian organizations such as IOM, WHO, WFP, and UNICEF, the last one providing social sector services to the people of marshlands.

Human Rights

The project is designed to respect and adhere to the requirements of all relevant conventions on human rights. The project will respect all land rights and will avoid

disposing anyone of their land. Moreover, the project investments in climate-proof water infrastructure to ensure water supply up to the farmland plots will facilitate poor farmers to re-occupy and make their land productive. The project will raise awareness and support women to make use of their rights of using the land near their houses for growing vegetables, poultry farming and the rearing of goats or sheep, and their rights to rent agricultural land as per law 35/1983.

Gender Equity and Women's Empowerment

IFAD's poverty targeting and gender sensitive design and implementation guidelines updated in January 2013 were also completed for the Project. Women and youth are given a central role in the project. The project design team met with all the Governorate elected councils, who all have a person in charge of women affairs. These representatives – who were elected by the people – will act as part of the Governorate Advisory Committees to ensure that vulnerable groups and women are well targeted. Women will be benefitting from at least 50% of the value of the livelihood packages.

The project has developed a very proactive strategy for the participation of women in project activities especially recognizing that women have received a significant setback in Iraq due to years of conflict which has led to the deterioration of women's rights and confined many of them within the homestead in rural areas. The project will have specific gender dis-aggregated targets and budget allocations, service providers with women staff to ensure outreach to women and integrate gender aspects in all reports. Each of the components would have an approach to encourage the inclusion of women and specific targets have been identified for them. The identification of assets, skills training and enterprise development would be designed to address opportunities of relevance for women. The project will promote participatory and capacity development tools with a gender focus both at the national level (institutional development and policy improvement) and at the local level. The staff of the Governorates Coordination Teams (GCT) will include a Training, Gender and Community Organizer and a Monitoring & Evaluation Officer The monitoring and evaluation indicators have been disaggregated by gender.

Core Labour Rights

Activities under project Component 2 will create employment enabling marginalized and vulnerable groups including unemployed youth and women to raise their income. The relevant national labour laws guided by the ILO labour standards will be followed throughout project implementation.

Indigenous Peoples

As project does not involve any particular indigenous group, this aspect does not seem to be of relevance in terms of further assessment for ESP compliance.

Involuntary Resettlement

As no involuntary resettlement is foreseen in any circumstance during project implementation, this aspect does not seem to be of relevance in terms of further assessment for ESP compliance.

Protection of Natural Habitats and Conservation of Biological Diversity

Damage to natural habitats and threats to biological diversity as a result of the project implementation are unlikely. Conversely, the sustainable management of water, soil, and fishing in the marshland areas will have an indirect positive impact in the environmental quality of the wetlands.

Climate Change

This is inherently an adaptation project and as such no mal-adaptation is foreseen. A detailed climate change vulnerability assessment of the Agriculture Sector in Iraq was undertaken by IFAD in collaboration with WFP, and this assessment provided guidance into the project activities. The project will not provide or install infrastructure or appliances that result in increased greenhouse gases emissions.

Pollution Prevention and Resource Efficiency

No negative effects are expected from the project implementation. Conversely, the adaptation measures for agriculture production supported by the project will significantly contribute to water use efficiency, and the reduction of soil and water pollution as a result of the proposed soil desalinization and organic agriculture production techniques.

Public Health

No public health issues are foreseen in the project implementation. Improving public health (e.g. increased availability of water, and water pollution reduction) is a positive impact area of this project. Partnership with humanitarian organizations in the target governorates will have a synergetic positive impact on public health and safety.

Physical and Cultural Heritage

No physical or cultural heritage impacts are foreseen. No heritage sites (at risk) have been identified during the screening risks of proposed interventions in target areas.

Lands and Soil Conservation

These will be part of the assessments undertaken during the inception phase along with the hydrological studies related to the water infrastructure rehabilitation. The risks could not be identified at the design stage as these are related to the specific schemes to be rehabilitated, which will be identified during project inception. Also, and as mentioned

before, an ESMP will be developed at inception stage, consulted upon with all relevant stakeholders and shared with the Adaptation Fund.

No negative effects are expected from the soft interventions planed by the project. Conversely, the adaptation measures for agriculture production supported by the project will significantly contribute to soil salinity control and desalinization, soil fertility improvement, and soil water conservation. Marshlands will indirectly benefit from the sustainable management of soil, water and fishing resources in these vulnerable areas.

PART III: IMPLEMENTATION ARRANGEMENTS

- **Describe the arrangements for project / programme implementation.**

BRAC will climate proof the IFAD Smallholder Agriculture Revitalization Project (SARP). This will ensure that the AF project benefits from close implementation, supervision, and M&E support, as well as benefit from the SARP project staff at central and Governorate level.

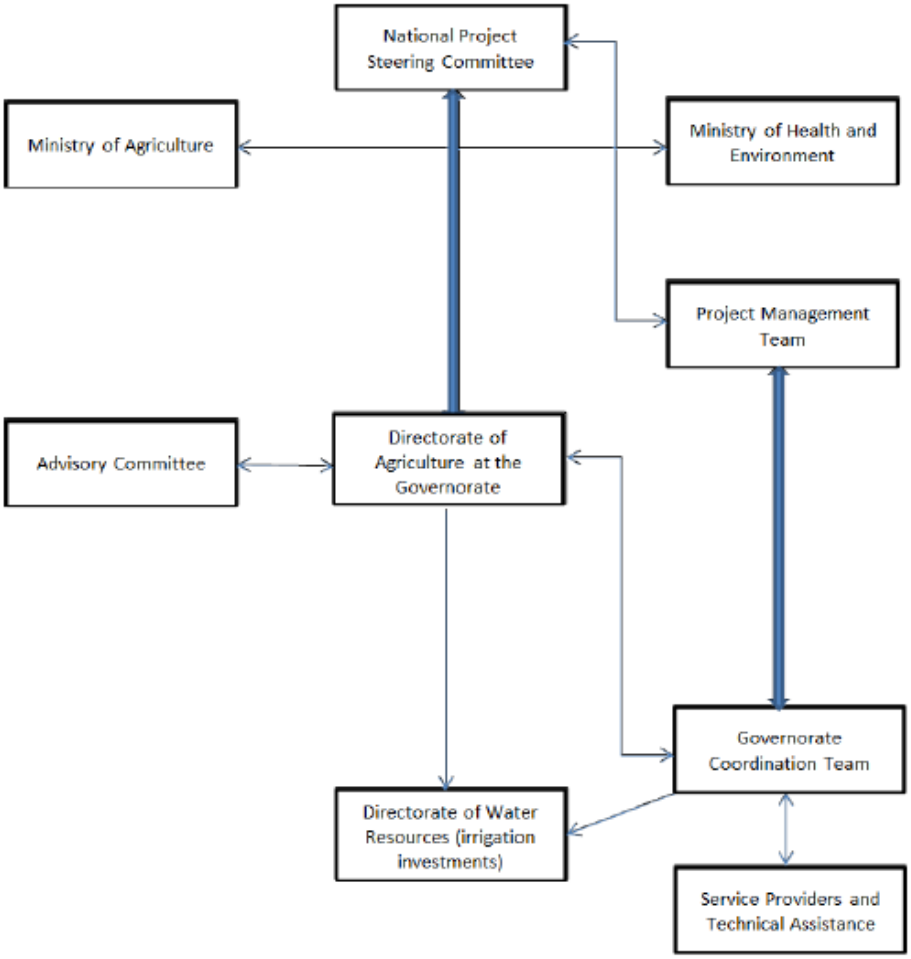
The context in Iraq warrants a differentiated and flexible operational approach to project management, project roll out and supervision because of its classification as one of the most fragile countries. Recognizing the limited capacity of local public and private sector institutions, the project implementation arrangements count on the combined capacity of both public, private and community institutions to assist in project implementation.

The three main entities involved in the project/IFAD baseline implementation over a six years' period would be the Ministry of Agriculture (MoA), the Ministry of Health and Environment (MoHE), and the Ministry of Water Resources (MoWR). The MoA will be the lead agency responsible for the implementation of the project, in close direct and regular coordination with the MoHE. The MoHE will have a leading role in the implementation of the policy and capacity development activities on mainstreaming CC adaptation into the agricultural sector (Outcome 1.1). The MoWR will be responsible for water management issues, including rehabilitation and maintenance of the irrigation and drainage canals, and other related tasks. The project will have a ***Project Steering Committee*** (PSC) which would be led by the Deputy-Ministry of Agriculture and have representatives of the MoHE, MoWR and MoA. The PSC would also include technical resource people. The PSC would meet at least once a year to approve the programme and provide guidance on key aspects. The National Programme Coordinator would be the Secretary of the PSC. The composition of PSC will be: (maximum of 13 people with at least 4 women):

-Chair: Deputy Minister of Agriculture
-Director General of Environment
-Director General of Water Resources
-Director General, Ministry of Planning
-Director General of Planning , Ministry of Agriculture
-3 technical resource people (nominated by the Chair) including women
-Technical members as required – including women
-Project Manager (Secretary)

A ***Project Management Team*** (PMT) would be established in Baghdad and be responsible for overseeing implementation of the project. The PMT would be led by a National Project Coordinator and would be assisted by a Financial Officer, a Procurement Officer, a Monitoring and Evaluation Specialist who would coordinate the reports from the Governorates to present quarterly statistical reports and annual progress reports on the project. The PMT would also include a Climate Change Adaptation Specialist (CCAS) who would assist in ensuring full integration of the climate change adaptation activities in BRAC/SARP. BRAC will cover the cost of hiring the CCAS. Experts and service providers will be hired to provide technical support and guidance for the implementation of the different project components, and help integrate CC-related issues in BRAC/SARP interventions and M&E system.

Project Management Structure



The Director of the Directorate of Agriculture would assume the overall responsibility for the project, at the governorate level. The structure would include an ***Advisory Committee*** that would advise the Department of Agriculture in each Governorate on key technical, social and institutional aspects of the project during implementation. The Governorate level Advisory Committees will comprise: (max 11 people with at least 4 women):

-Chair: Governorate Director of Agriculture
-Governorate Director of Environment
-Governorate Director of Water Resources
-The Governorate Council representative (a woman)
-Business Representatives of 3 key Value chains (including women)
-NGO representatives (2) including women
-Representative of Agriculture University

A ***Governorate Management Team*** (GMT) would implement and coordinate project activities. The GMT would have a dedicated Governorate Coordinator who would be responsible for day to day implementation in each governorate. The staff of the GMT would include a Gender, Training and Community Organizer and a Monitoring & Evaluation Officer. The Directorate of Water Resources would implement the irrigation investments. The team would be supported by a competitively recruited service provider who would be selected from local NGOs or private sector firms that would be responsible for identifying the target group and supporting them in the implementation of the various project activities in coordination with the Department of Agriculture Extension. Service providers will be requested to include women staff to deal with specific gender-related assessments, participation, capacity development and implementation interventions.

The hiring of PMT and GMT staff will follow IFAD policy on Gender Equality and Women's Empowerment, in terms of increasing number of women employed by IFAD and by IFAD-led projects.

Implementation and supervision procedures may be fine-tuned as recommended by the IFAD strategy for engagement with fragile situations: this could include remote supervision on occasions as per the evolving security conditions, flexibility in programme roll-out (phased approach), focus on complementary partnerships during implementation, and regular security assessments in consultation with FSU/ UNDSS.

- **Describe the measures for financial and project / programme risk management.**

Financial and project risks measures will be assessed as an on-going process throughout the implementation of the project. A comprehensive and detailed framework for risk management will be described in the full draft document. That framework will consider the fiduciary procedures of IFAD and the Adaptation Fund.

The potential risks of the project are:

Table 6. Potential risks and mitigation measures

Risk	Rating	Mitigation measures
Delays in staffing and timely project start up and disbursement	Medium	Use IFAD co-funding to train concerned actors, facilitate start-up, and investigate the possibility of starting with "Year Zero" to prepare the grounds for implementation.

Threat to security in performing field work	High	The project will focus in the governorates in the south of the country where there is no on-going conflict.
The Government capacity is extremely limited and Government budgets for operational purposes are inadequate	Medium	The project will be implemented through service providers and Government capacity will be built during the initial years and a flexible approach would be adopted during implementation and supervision.
As a result of the security threat in the country, the movement of any staff member within the purview of the UN system is extremely restricted.	Medium	Use local contractors and service providers, close contact with local authorities. Use the support of established partners (FAO, ICARDA, UN agencies based in Basra) and private sector or civil society as service providers.
Increased weather variability related to climate change	Medium	The project will have a major focus on capacity development on institutional and technical skills, decision-making tools for adaptation planning and implementation based on climate change modelling and early warning systems, shifting to climate risk-tolerant crops/varieties and breeds, adoption of climate-resilient agronomic systems and technologies.
Low adoption rate of technology by farmers	Medium	Build on the successful approach of establishing FFS demonstration plots, improve incentives and conduct training for farmers, and services providers (ToT) on the various components of technology packages.
Iraq procurement rules and practices are not harmonized across institutions and changing rapidly.	Medium	IFAD procurement rules would be applied strictly in the country.
Availability of appropriately experienced and qualified non-government service providers.	Medium	Use of private sector firms which have been used by previously by other UN agencies and other donors to undertake the implementation in the field in partnership with government and NGOs.

- **Describe the measures for environmental and social risk management, in line with the Environmental and Social Policy of the Adaptation Fund.**

IFAD-funded projects and programmes are designed in a participatory manner, taking into account the concerns of all stakeholders. IFAD requires that projects are carried out in compliance with its policies, standards and safeguards. Moreover, IFAD's Strategic Framework calls for ensuring that projects and programmes promote the sustainable

use of natural resources, build resilience to climate change and are based upon ownership by rural women and men themselves in order to achieve sustainability. The project design was assessed through the social, environmental and climate assessment procedures (SECAP) of IFAD, which are fully aligned with the AF Environmental and Social Policy.

The expected impact of the project on the Environment will generally be positive given its orientation towards the promotion of water use efficiency at conveyance and on-farm level through the adoption of water saving irrigation systems and the promotion of climate-resilient agronomic systems and technologies, such as the combined use of conservation agriculture (CA) interventions - no-till, soil mulching, crop rotation, spatial and temporal crop diversification, reduced use of chemicals - organic agriculture (OA), integrated pest management (IPM), and the adoption of drought- and salt-tolerant food and fodder crops, as well as well-adapted livestock breeds. Crop diversification, the use of species/varieties/breeds well adapted to climate risks, and agronomic practices improving soil and water conservation and management, will have a positive impact on the social and economic conditions of the most vulnerable rural population – namely women and young unemployed – through improved production and income diversification opportunities. In addition, training and capacity building of smallholder farmers and farmers' groups should result in positive environmental and social benefits in the medium term through regular "learning-by-doing" FFS, awareness and communication campaigns on such issues as water scarcity and salinity, over the limited use of chemicals and IPM practices, the adoption of climate-adapted agronomic systems and technologies, and conservation of biodiversity.

The project will minimize environmental and social risks by integrating a safeguarding system in:

1. **Institutional processes:** Staff and partners will be guided by the IFAD Project Management Team to identify, assess, manage and/or mitigate environmental and social risks. Contractual agreements with service providers will include terms and conditions related to safeguard compliance during project implementation, based on the ESMP to be developed during project inception phase, and the environmental and social risks and impacts assessment carried out under IFAD SECAP.

2. **Execution of 'soft' project activities:** Proposed 'soft' project activities have been screened for environmental and social risks during project preparation, based on best practices already tested and validated by the National Agricultural Research System (NARS) and other partners (e.g. ICARDA, FAO) through several regional agriculture research for development (R4D) projects (some co-financed by IFAD grants inclusive of Iraq). Outcomes will be integrated in the ESMP.

3. **Implementation of 'hard' interventions/sub-projects:** Proposed small-scale water infrastructure investments under project Component 2 will be screened for environmental and social risks during project implementation. Outcomes will be integrated in the ESMP.

Due to the particular situation in the country, the need to get projects operational in a short time to benefit the extremely vulnerable people in the target areas, IFAD and the Government have decided that an ESMP will be developed during the project inception year. The ESMP will include mitigation and monitoring actions and the institutional responsibilities for implementing them clearly. The ESMP will be submitted to the Adaptation Fund by the end of 2018. It will include a grievance mechanism, based on the IFAD Grievance Mechanism that has the objective to ensure that appropriate mechanisms are in place to allow individuals and communities to contact IFAD directly and file a complaint if they believe they are or might be adversely affected by an IFAD-funded project/programme not complying with IFAD's Social and Environmental Policies and mandatory aspects of its Social, Environmental and Climate Assessment Procedures (SECAP) effective as of 1 January 2015. Affected individuals should contact IFAD if the member state body implementing the project (the Lead Agency) has failed to respond to their concerns. However, concerns may also be brought to the attention of IFAD in cases where the persons raising the issue feel that they might be subject to retaliation if they were to approach the Lead Agency or other government agency directly. Complaints must concern environmental, social and climate issues and should not be accusations of fraudulent or corrupt activities in relation to project implementation – these are dealt with by IFAD's Office of Audit and Oversight.

Eligibility criteria to file a complaint for alleged non-compliance with IFAD's Social and Environmental Policies and mandatory aspects of its SECAP IFAD will consider only complaints meeting the following criteria:

- The complainants claim that IFAD has failed to apply its social and environmental policies and/or the mandatory provisions set out in SECAP.
- The complainants claim that they have been or will be adversely affected by IFAD's failure to apply these policies.
- Complaints must be put forward by at least two people who are both nationals of the country concerned and/or living in the project area.
- Complaints from foreign locations or anonymous complaints will not be taken into account.
- Complaints must concern projects/programmes currently under design or implementation. Complaints concerning closed projects, or those that are more than 95 per cent disbursed, will not be considered.

The process for the grievance mechanism is as follows: The complainants should first bring the matter to the attention of the government or non-governmental organisation responsible for planning or executing the project or programme (the Lead Agency), or to any governmental body with the responsibility for overseeing the Lead Agency. If the Lead Agency does not adequately respond then the matter may be brought to the attention of IFAD. The issue may be brought straight to IFAD if the complainants feel they might be subject to retaliation if they went to the Lead Agency directly. Anyone who wishes to bring these issues to IFAD should send an email to SECAPcomplaints@ifad.org. This address is supervised by IFAD's Programme Management Department (PMD), who will refer the inquiry to the responsible Regional Division Director and Country Programme Manager.

The Regional Division will examine the complaint and, if necessary, will contact the Lead Agency, or the governmental body with the responsibility for overseeing the Lead Agency, to decide if the complaints are justified. If the complainants request that their identities be protected, IFAD will not disclose this information to the Lead Agency or anyone else in government. If the complaint is not justified, the Regional Division will inform the complainants in writing. If the Regional Division finds the complaint is justified and there is proof of actual or likely harm through IFAD's failure to follow its policies and procedures, IFAD will take action. This may consist of making changes to the project/programme, or requiring that the government observes its obligations under the Financing Agreement. IFAD's response will focus bringing the project/programme into compliance and no monetary damages will be available or paid in response to such complaints. The complainants will be informed of the outcome of the issue by the Regional Division.

In all cases, if the complainants disagree with IFAD's response, they may submit a request to SECAPcomplaints@ifad.org and request that an impartial review be carried out by the Office of the Vice-President. The Office of the Vice-President will decide on the steps to be taken to examine such complaints, including, if necessary, contracting external experts to review the matter. The complainants will be informed of the results of the review. IFAD will include in its Annual Report a list of received complaints and a summary of actions taken to address them.

- **Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.**

The main objectives of Monitoring and Evaluation are: (i) to provide timely and accurate information on implementation progress and constant feedback for decision-making and addressing potential work plan deviations, problem areas and management improvement needs (adaptive management approach); (ii) to evaluate the performance of implementing project teams, indirect partners, and service providers; and (iii) to assess achievements at different levels (output, result, project impact). Project monitoring and evaluation will be conducted in accordance with established AF procedures.

Day to day monitoring of implementation progress will be the responsibility of the project team, based on the project's Annual Work Plan and its indicators. During the first months of the project, the project team will complete and fine-tune baseline data for each indicator, and will define and fine-tune performance, progress and impact indicators of the project at an Inception Workshop. Specific targets for the first year of implementation, progress indicators, and their means of verification will be developed at this Workshop. These will be used to assess whether implementation is proceeding at the intended pace and in the right direction and will form part of the Annual Work Plan. Targets and indicators for subsequent years would be defined annually as part of the internal evaluation and planning processes undertaken by the project team. The project will adopt a gender- and youth-sensitive monitoring and evaluation system, providing disaggregated information by gender and age.

A fundamental objective of the Inception Workshop will be to assist the project team to understand and take ownership of the project's goals and objectives, as well as finalize preparation of the project's first annual work plan on the basis of the project's Table of Activities, Monitoring Table and Budgets. Additionally, the purpose of the Inception Workshop will be to: (i) introduce project staff with the indirect partners which will support the project during its implementation; (ii) understand their roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms; (iii) provide a detailed overview of the project's reporting and monitoring and evaluation (M&E) requirements, with particular emphasis on the project implementation reviews and related documentation, the annual project report and related documentation to be periodically gathered, as well as the mid-term and final evaluations. The Terms of Reference for project staff and decision-making structures will be discussed in order to clarify for all, each party's responsibilities during the project's implementation phase.

A Project Inception Report will be prepared immediately following the Inception Workshop. It will include: (i) a detailed First Year/Annual Work Plan divided in quarterly time-frames detailing the activities and progress indicators that will guide implementation during the first year of the project; (ii) the detailed project budget for the first full year of implementation, prepared on the basis of the Annual Work Plan; (iii) a detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project related partners; (iv) a section on progress to date on project establishment and start-up activities and an update of any changed external conditions that may affect project implementation.

The project team will prepare an Annual Project Report (APR) to reflect progress achieved in meeting the project's Annual Work Plan and assess performance of the project in contributing to intended outcomes through outputs and partnership work. The format of the APR will be flexible but should include the following issues: (i) an analysis of project performance over the reporting period, including outputs produced and, where possible, information on the status of the outcome; (ii) the constraints experienced in the progress towards results and the reasons for these; (iii) the three (at most) major constraints to achievement of results; (iv) AWP and other expenditure reports; (v) lessons learned; (vi) clear recommendations for future orientation in addressing key problems in lack of progress.

Mid-term Evaluation: An independent Mid-Term Evaluation will be undertaken at the end of the second year of implementation. The Mid-Term Evaluation will take the form of a qualitative study to determine the progress being made towards the achievement of outcomes and will identify course correction if needed. It will focus on: (i) the effectiveness, efficiency and timeliness of project implementation; (ii) will highlight issues requiring decisions and actions; and (iii) will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term, including the revision of indicators if needed. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the

parties to the project document. The ToR for this Mid-term evaluation will be prepared by IFAD.

Final Evaluation: An independent Final Evaluation will take place three months prior to the completion of the project, and will focus on the same issues as the mid-term evaluation. The final evaluation will also look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. The Terms of Reference for this evaluation will be prepared by IFAD.

Table 6. Monitoring and evaluation plan and budget

Type of M&E activity	Responsible Parties	Budget USD (AF contribution) excluding project team staff time	Budget USD (IFAD SARP Baseline)	Time frame
Inception Workshop (IW) and report	Project Coordinator/ IFAD	USD 50,000		Within first two months of start up
Baseline survey	Project Team/IFAD	USD 42,000		Within first six months of start up
APR and PIR	Project Team/IFAD		USD 15,000	Annually
TPR and TPR report	Project team/IFAD		USD 15,000	Every year, upon receipt of APR
Mid-term Evaluation	Project team/IFAD External Consultants	USD 30,000		At the mid-point of project implementation
Final External Evaluation	Project team/IFAD External Consultants	USD 30,000		At the end of project implementation
Terminal Report	Project team IFAD/External Consultant		USD 30,000	At least one month before end of project

- **Include a results framework for the project proposal, including milestones, targets and indicators.**

	Indicators	Baseline	Mid-Term Milestone	Targets	Means of Verification	Assumptions
Project objective: strengthen the agro-ecological and social resilience to climate change in the four target governorates, by promoting adaptive agriculture production systems and technologies for improved livelihoods and food security of rural households	Number of people (disaggregated by gender) whose resilience[24] has been improved (with changed behaviour) as a result of project outputs Increase in income from agriculture.	None The baseline income of 44% of households in the project districts is below the poverty line of 76,896 Iraqi dinars (about $66) a month, or $2.2 a day.	8,000 HH (at least 40% women). Increase in income by at least 8%.	16,000 HH (at least 40% women). Increase in income by at least 20% for targeted households.	Beneficiary HH surveys; annual monitoring reports; field assessments; Official statistics	Stable security situation in project area. Commitment of national institutions and actors. National and international technical assistance available.

[24] Based on the Methodology for the UK International Climate Fund's Key Performance Indicator No. 4 (KPI4). The improvement of resilience will be based on measuring the specific aspects of resilience that the project targets (e.g. (i) nº of men/women with sustained access to efficient irrigation water; (ii) nº of men/women using agro-meteorological information to reduce climate risks to their production systems; (iii) nº of men/women with sustained adoption of climate resilient technologies promoted by the project).

Component 1: Capacity development to integrate CC adaptation and risk reduction into agriculture planning and production systems						
	Indicators	**Baseline**	**Mid-term Milestone**	**Targets**	**Means of Verification**	**Assumptions**
Outcome 1.1: Increased capacity of governmental staff on mainstreaming CC adaptation into the agricultural sector.	**IN1.1.1**: CC Adaptation Strategy for the Agriculture Sector. **IN1.1.2**: Number of governmental staff trained on climate change adaptation and risk reduction.	No strategy None	MoHE has established a working group with representatives of relevant ministries and other stakeholders, and hired technical expertise. 100 staff	The Strategy is finalized and validated. One Forest Landscape Plan produced and validated. 300 staff	Official bulletins; reports from workshops, training courses and learning visits; contracts to national and international consultants with TOR; annual project monitoring reports	Stable security situation in project area. Commitment of national institutions and actors. Project able to secure the necessary technical assistance. Information available nationally and internationally to carry out the work.
OP1.1.1 Climate change adaptation strategy for the agriculture sector developed. **OP1.1.2:** Skills for relevant governmental staff on climate change adaptation and risk reduction developed. **OP1.1.3**: A Training-of-trainers (ToT) programme is implemented targeting public administration staff, at national and governorate levels, dealing with mainstreaming CC adaptation into environmental, agriculture and water issues.						
	Indicators	**Baseline**	**Mid-term Milestone**	**Targets**	**Means of Verification**	**Assumptions**
Outcome 1.2: Technical and institutional capacity of agriculture practitioners and producers' organizations in	**IN1.2.1**: Number of people reporting adoption of climate-resilient systems and technologies.	None	8,000 HH	16,000 HH	Evaluation reports from training events and workshops; list of participating beneficiaries in field demonstration visits; beneficiary HH surveys; annual monitoring reports.	Commitment of national institutions and actors. Project able to secure national and international technical

the 4 targeted governorates developed to integrate knowledge on climate-resilient systems and technologies into practice.	**IN1.2.2**: Number of WUAs applying sustainable management of water resources in the target areas.	None	10	20		assistance. Political stability ensure proper institutional framework to carry out the work and achieve results.
OP1.2.1: Project beneficiaries are trained on climate-resilient approaches and technologies. **OP1.2.2**: Water users and organizations are enabled to effectively manage irrigation water in the target areas.						
Component 2: Climate-resilient Agriculture Investments						
Result Chain	**Indicators**	**Baseline**	**Mid-term Milestone**	**Targets**	**Means of Verification**	**Assumptions**
Outcome 2.1: Climate-proof systems and technologies for water supply from tertiary canals up to farmland plots are implemented in the target governorates.	**IN2.1.1**: Number of households reporting improved access to water for production purposes.	None	2,500 HH	6,650 HH	Beneficiary HH surveys; workshops and training reports; field visits; annual monitoring reports; official statistics.	Water will be released from main canals. Technologies disseminated will be relevant for beneficiaries. Local communities and other critical partners willing to join the works. Project able to secure national and international technical assistance.
	IN2.1.2: Number of hectares of farmland irrigated with water from the constructed/ rehabilitated climate-proof infrastructure.	None	2,000 ha	8,322 ha		

OP2.1.1: Efficient water supply from tertiary canals up to farmland plots is secured based on climate-proof systems and technologies.						
	Indicators	**Baseline**	**Mid-term Milestone**	**Targets**	**Means of Verification**	**Assumptions**
Outcome 2.2: The national Agro-meteorological Monitoring Network is upgraded informing early warning systems.	**IN2.2.1**: Number of agro-meteorological stations established/ repaired. **IN2.2.2**: Number of beneficiaries (disaggregated by gender) using agro-meteorological information to reduce climate risks to their production systems.	36 None	3 more 8,000 HH	6 more 16,000 HH	Official statistics; field visits; workshops and training reports; web info (agromet.gov.iq); relevant MoA staff surveys; annual project monitoring reports; periodical info from Agro-Meteorological info dissemination outlets.	Stable security situation in project area. Commitment of national institutions and actors. Project able to secure the necessary technical assistance. Project able to secure purchase of adequate equipment.
OP2.2.1: Agro-meteorological network upgraded and weather information management system developed. **OP2.2.2**: Climate-risk early warning systems developed.						
	Indicators	**Baseline**	**Mid-term milestone**	**Targets**	**Means of Verification**	**Assumptions**
Outcome 2.3: Climate resilient agriculture technologies adopted by target farmers and producers'	**IN2.3.1**: Number of grantees (disaggregated by gender) with sustained adoption of climate resilient	None	4,000 HH	9,350 HH	Beneficiary HH surveys; field visits; workshops and training reports; annual project monitoring reports.	Project able to secure national and international technical assistance.

organizations.	technologies promoted by the project. **IN2.3.2**: Number of persons (disaggregated by gender) reporting increase in production	None	3,000 HH	6,650 HH		
OP2.3.1: Grant packages allocated to farmer groups and associations of women for climate-resilient agriculture investments, including production, post-harvesting, processing and income diversification equipment and infrastructure.						

- **Demonstrate how the project / programme aligns with the Results Framework of the Adaptation Fund.**

The project will be in harmony with the Strategic Results Framework of AF, whose general purpose is to "assist developing country Parties to the Kyoto Protocol that are particularly vulnerable to the adverse effects of climate change in meeting the costs of projects and concrete adaptation programs to implement resilient to climate change".

This part will be developed in the full proposal document.

Project Objective(s)[25]	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
Strengthen the agro-ecological and social resilience to climate change in the four target governorates, by promoting adaptive agriculture production systems and technologies for improved livelihoods and food security of rural households	Number of people (disaggregated by gender) whose resilience[26] has been improved (with changed behaviour) as a result of project outputs Increase in income from agriculture.	**Outcome 2**: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses. **Outcome 3:** Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level. **Outcome 4:** Increased adaptive capacity within relevant development sector services and infrastructure assets. **Outcome 6:**	2.1. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased. 3.2. Percentage of targeted population applying appropriate adaptation responses. 4.2. Physical infrastructure improved to withstand climate change and variability-induced stress. 6.2. Percentage	9,999,660

[25] The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

[26] Based on the Methodology for the UK International Climate Fund's Key Performance Indicator No. 4 (KPI4). The improvement of resilience will be based on measuring the specific aspects of resilience that the project targets (e.g. (i) nº of men/women with sustained access to efficient irrigation water; (ii) nº of men/women using agro-meteorological information to reduce climate risks to their production systems; (iii) nº of men/women with sustained adoption of climate resilient technologies promoted by the project).

		Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas. **Outcome 7:** Improved policies and regulations that promote and enforce resilience measures	of targeted population with sustained climate-resilient alternative livelihoods. 7.1 Climate change priorities are integrated into national development strategy	
Project Outcome(s)	**Project Outcome Indicator(s)**	**Fund Output**	**Fund Output Indicator**	**Grant Amount (USD)**
1.1.Increased capacity of governmental staff on mainstreaming CC adaptation into the agricultural sector	1.1.1: CC Adaptation Strategy for the Agriculture Sector. 1.1.2: Number of governmental staff trained on climate change adaptation and risk reduction.	**Output 2:** Strengthened capacity of national and sub-national centres and networks to respond rapidly to extreme weather events **Output 7*:*** Improved integration of climate-resilience strategies into country development plans.	2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events (by gender) 7.1.1 No. of policies introduced or adjusted to address climate change risks (by sector)	264,000
1.2. Technical and institutional capacity of agriculture practitioners and producers' organizations in the 4 targeted governorates developed to integrate knowledge on climate-resilient systems and technologies into practice	1.2.1: Number of people reporting adoption of climate-resilient systems and technologies. 1.2.2: Number of WUAs applying sustainable management of water resources in the target areas.	***Output 3*:** Targeted population groups participating in adaptation and risk reduction awareness activities	3.2. Percentage of targeted population applying appropriate adaptation responses	220,000
2.1. Climate-proof systems	2.1.1: Number of households	**Output 4:** Vulnerable	4.1.2. No. of physical assets	5,000,000

and technologies for water supply from tertiary canals up to farmland plots are implemented in the target governorates	reporting improved access to water for production purposes. 2.1.2: Number of hectares of farmland irrigated with water from the constructed/ rehabilitated climate-proof infrastructure.	development sector services and infrastructure assets strengthened in response to climate change impacts, including variability	strengthened or constructed to withstand conditions resulting from climate variability and change (by sector and scale)	
2.2. The national Agro-meteorological Monitoring Network is upgraded informing early warning systems	2.2.1: Number of agro-meteorological stations established/ repaired. 2.2.2: Number of beneficiaries (disaggregated by gender) using agro-meteorological information to reduce climate risks to their production systems.	**Output 1.2**: Targeted population groups covered by adequate risk-reduction systems **Output 3**: Targeted population groups participating in adaptation and risk reduction awareness activities	1.2.1. Percentage of target population covered by adequate risk-reduction systems 3.1 No. of news outlets in the local press and media that have covered the topic	729,000
2.3. Climate resilient agriculture technologies adopted by target farmers and producers' organizations	2.3.1: Number of grantees (disaggregated by gender) with sustained adoption of climate resilient technologies promoted by the project. 2.3.2: Number of persons (disaggregated by gender) reporting increase in production.	**Output 6:** Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability	6.1.1.No. and type of adaptation assets (tangible and intangible) created or strengthened in support of individual or community livelihood strategies	2,127,000

- **Include a detailed budget with budget notes, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.**

The detailed budget is included in a separate excel file.
The following table provides a summary budget with AF funding and IFAD SARP baseline project funding:

	Total AF	Total IFAD SARP Co-funding	Grand Total
Investment Costs			
Component 1			
Development of a CC Adaptation strategy for the Agriculture Sector (hiring expertise, organization of workshops, field surveys)	83000		83000
Training programme for governmental staff on climate change adaptation and risk reduction issues (training workshops, learning visits to best practices abroad)	100000		100000
Training-of-trainers programme for extension agents, researchers and NGOs supporting project beneficiaries (training workshops, learning-by-doing training events in demonstration plots)	81000		81000
Training activities directly targeting project beneficiaries on climate-resilient systems and technologies (learning-by-doing events in demonstration plots, local workshops, visits to best practice farms)	180000		180000
Training on sustainable water irrigation management for WUAs (local workshops, visits to best practices)	40000		40000
Other training & workshops		155000	155000
Lessons learned and best practices shared (publications, online hub)	45870		
Sub-total Component 1	**529870**	**155000**	684870
Component 2			
Construction and rehabilitation of small infrastructure and equipment for irrigation water from tertiary canals up to farmland plots, using climate-proof technologies	5000000	6113000	11113000
Feasibility and detailed design studies	240000	193000	433000
Purchasing and installation of 6 new agro-meteorological stations	384000		384000
Reparation of 2 receive sites	26000		26000
Development of climate-risk early warning system	319000		319000
Consultancies	176000		176000
Small grant packages for individual farmers and farmer groups and associations	1000000	5725000	6725000
Large grant packages for individual farmers and farmer groups and associations	600000	362000	962000
Income diversification grant packages for women and youth	527000	2667000	3194000
Livestock Development Investments		369000	369000
Consultancies		461000	461000
Market studies and assessments		487000	487000
Sub-Total Component 2	**8272000**	**16532000**	24804000
Total Investment Costs	**8801870**	**16687000**	25488870
Execution costs			
CC Adaptation Coordinator	104000		104000
CC Adaptation Coordinator allowance	32000		32000
M&E Officer Support Staff	63000		63000
M&E Officer Support Staff allowance	33000		33000
Other salaries and allowances		507000	507000
Operating Costs	26000	993000	1019000
Baseline survey	42000	28000	70000
Start-up workshop	50000		50000
Mid term review	30000		30000
End line review	30000		30000
Computers	6000		6000
Printers	1000		1000
Digital GPS camera	1000		1000
Total Execution Costs	**418000**	**1528000**	**1946000**
Total Project Investment & Execution Cost	**9219870**	**18215000**	**27434870**
Project Management Fee Costs	**779790**		
Total Project Costs	**9999660**		

Project execution cost correspond to only 4.8% (USD 418,000) of the investment costs. This is due to the fact that the project execution is fully supported by the IFAD SARP baseline Project Management Unit, and will benefit from staff, operational cost, finance specialists, procurement specialists and M&E specialists both at the central and governorate levels. The savings on the management cost will be invested in concrete activities that directly target beneficiaries.

Project management fee

The project management fee (8,26% of the total budget) will be used by IFAD to cover the costs associated with the provision of general management support. The following table provides a breakdown of the estimated costs of providing these services:

Breakdown of costs for the project management fee

Items	Amount (USD)
Financial management	100,000
Information, Reporting, Knowledge Management	200,000
Performance Management – progress monitoring, field monitoring	179,790
Programme support	300,000
Total	779,790

Management Fee Budget Notes:

1. **Finance, Budget and Treasury**.
This covers general financial oversight, management and quality control to:
- Manage, monitor and track AF funding including allocating and monitoring expenditure based on agreed work plans, financial reporting to the AFB and the return of unspent funds to AF;
- Ensuring that financial management practices comply with AF requirements and support audits as required; E
- Ensuring financial reporting complies with AF standards; and
- Ensure cost efficient procurement processes and compliance with Government procurement rules and provide support to EE in this direction.

2. Information, Reporting, Knowledge Management:
- This includes maintaining information management systems and specific project management databases to track and monitor project implementation
- Periodic Reporting to the AFB on the physical progress and AF result framework
- Creating platform for knowledge dissemination for the learnings out of project

3. Performance Management - Progress Monitoring- Field Monitoring:
- Providing oversight of the monitoring and evaluation function of the Executing Entity.
- Field monitoring at six monthly interval and progress reporting

• Providing guidance on AF reporting requirements; managing the relationship with the AF and ensuring outputs and outcomes match with AF expectations;
• responding to information requests and arranging revisions;

4. Programme Support

• Providing technical support in the areas of risk management
• Policy, programming, and implementation support services;
• Providing guidance in establishing performance measurement processes;
• Technical support on methodologies, TOR validation, identification of experts, results validation, and quality assurance.
• Technical support, troubleshooting, and support evaluation missions as necessary;
• Support on technical issues in programme implementation

- **Include a disbursement schedule with time-bound milestones.**

Instalment Nº	Percentage	Amount (USD)	Year	Milestone
1st instalment	30.77%	3,077,632	Jun 2018	1. Hiring of project staff 2. Creation of the project Steering Committee 3. Completion of inception workshop 4. Preparation of project implementation manual 5. Sites assessments and mapping 6. Farmers' mobilization 7. Completion of baseline 8. M&E & Learning framework 9. Hiring expertise, gathering information, drafting document, and organization of workshops for the development of the CC Adaptation Strategy 10. Start training programme for governmental staff 11. Start ToT programme 12. Start training programme of project beneficiaries 13. Start training programme of WUAs 14. Purchasing and installation of agro-meteo stations 15. Reparation works of the 2 receive sites and finalization of Agro-Meteo Monitoring Network upgrading 16. Development of early warning system 17. Organize working groups in the target areas involving all concerned actors related to water management 18. Start feasibility and detail design studies for the climate-proof water

				infrastructure rehabilitation and expansion 19. Start construction works of water infrastructure
2nd instalment	22.20%	2,216,632	Dec 2019	20. Completion of training programme for governmental staff 21. Completion of ToT programme 22. Follow-up of training programme of project beneficiaries 23. Follow-up training programme of WUAs 24. Follow-up of the feasibility and detail design studies for the climate-proof water infrastructure rehabilitation and expansion 25. Follow-up of construction works of water infrastructure 26. Organization of information events with beneficiaries to raise awareness about grant funding opportunities 27. Call for tenders for the different grant packages 28. Preparation of grants' contracts 29. Provision of institutional development/technical/marketing assistance and advise to grantees 30. Completion of mid-term review
3th instalment	22.14%	2,214,632	Jun 2021	31. Completion of of training programme of project beneficiaries 32. Completion of training programme of WUAs 33. Follow-up of the feasibility and detail design studies for the climate-proof water infrastructure rehabilitation and expansion 34. Follow-up of construction works of water infrastructure 35. Organization of information events with beneficiaries to raise awareness about grant funding opportunities 36. Call for tenders for the different grant packages 37. Preparation of grants' contracts 38. Provision of institutional development/technical/marketing assistance and advise to grantees
4th instalment	14.44%	1,444,632	Dec 2022	39. Follow-up of the feasibility and detail design studies for the climate-proof water infrastructure

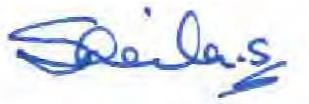
				rehabilitation and expansion 40. Follow-up of construction works of water infrastructure 41. Organization of information events with beneficiaries to raise awareness about grant funding opportunities 42. Call for tenders for the different grant packages 43. Preparation of grants' contracts Provision of institutional development/technical/marketing assistance and advise to grantees
5th instalment	10.46%	1,046,132	Dec 2023	44. Organization of information events with beneficiaries to raise awareness about grant funding opportunities 45. Call for tenders for the different grant packages 46. Preparation of grants' contracts 47. Provision of institutional development/technical/marketing assistance and advise to grantees 48. Development of knowledge products 49. Completion of end-line review and final evaluation

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government[27] *Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:*

Dr. Adeelah Hammood Hussen Minister of Health and Environment	Date*: 1 December 2016*

B. Implementing Entity certification *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.	
 Sheila Mwanundu Implementing Entity Coordinator	
Date: *09/03/2017*	Tel: +39 06 5459 2031 email: s.mwanundu@ifad.org
Project Contact Person: Rami Abu Salman	
Tel.: +39 06 5459 2291	Email: r.salman@ifad.org

[6] Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.