



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:

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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 km², that extends between latitudes 29°5' and 37°22' north, and between longitudes 38°45' and 48°45' 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 16°C dropping at night to 2°C. Summers are dry and hot to extremely hot, with a shade temperature of over 43°C during July and

August, yet dropping at night to 26°C. 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 mountains¹.

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

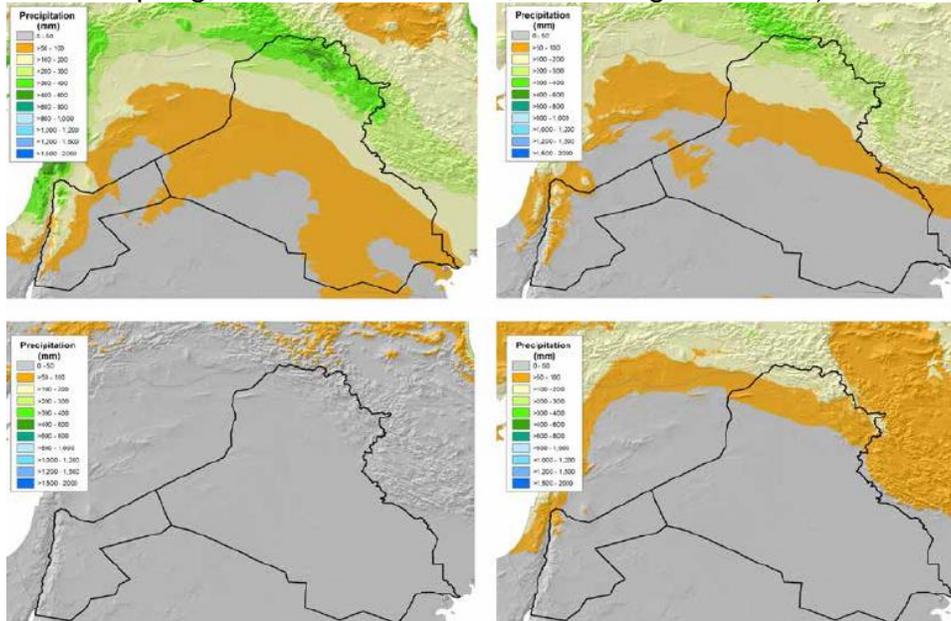
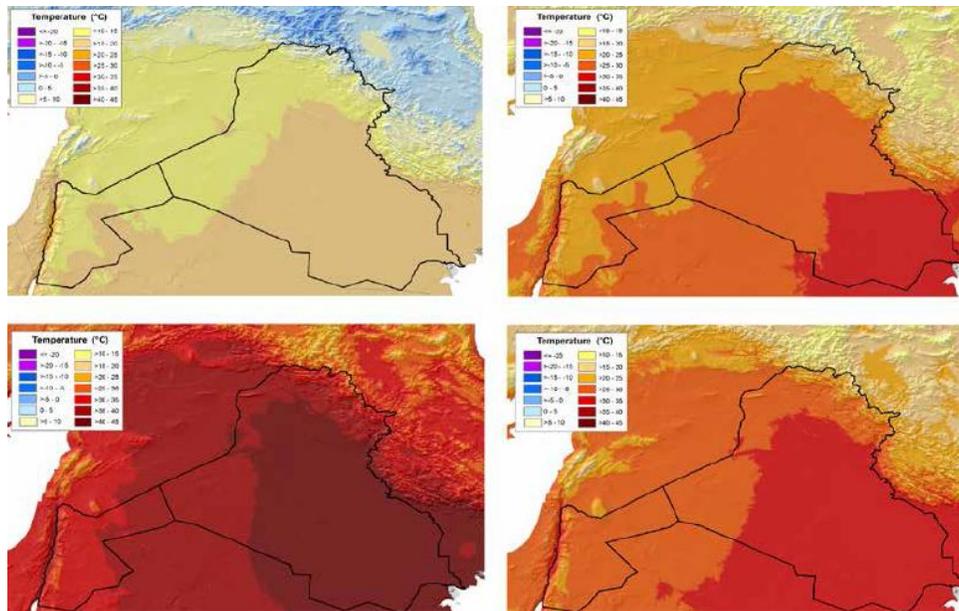


Figure 2. Seasonal mean maximum temperature (top left: winter; top right: spring; bottom left: summer; bottom right: autumn)³.

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, № 12 (Serial № 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.

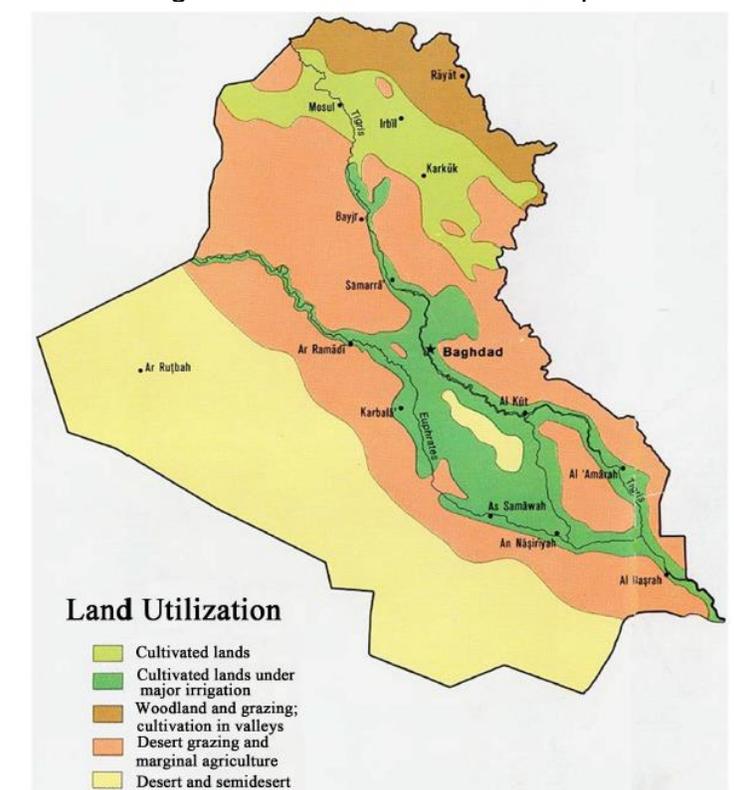
Gender. Women in Iraq are represented in the higher levels of the public sector and government. In 2010, the average rate of parliament seats held by women was 27%. The rural unemployment rate is higher for females than males. Only 18% of women are employed and they take up only 7% of employment in non-agricultural 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 Iraq⁴.



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 barley⁵. 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 Iraq⁶.

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>

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.

Table 1. The crop structure in Iraq during the period 1990-2012⁷

Specification	1990		2000		2010		2012	
	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 1990-2011⁸

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 m³ for the period 1933-1971 to 12.75 billion m³ (42%) for the period 2008-11. For the Tigris, the inflow declined from 49.22 billion m³ for the period 1933-98 to 33.11 billion m³ (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 m³ in 1964 to 998 m³ 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 m³; (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.

⁷ FAO <http://faostat3.fao.org>

⁸ FAO <http://faostat3.fao.org>

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 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, which will support the country in identifying

needed future interventions to support the agricultural sector and enhancing food security.

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 N° 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 national employment policy (NEP) of both the Federal and the Kurdistan Governments of Iraq were developed with the ILO's assistance. The NEP of the Federal Government was endorsed and adopted by the Council of Ministers as a national policy document. The Iraqi Council of Representatives (Parliament) approved the new Labour Code in 2015 after long and extensive tripartite discussions. The new labour legislation only covers the private sector but includes amendments proposed by the Iraqi unions with ILO support, recognizing the right to collective bargaining and reintroducing the right to strike (banned since 1987). The law also limits child labour and provides improved protections against discrimination and sexual harassment in the workplace. ILO also assisted the Government in developing a National Youth Strategy in partnership with UNFPA, introducing life and employability skills. In addition, 6 SME policy framework documents were developed and a draft legislation on micro, small and medium enterprises was submitted to the Council of Ministers. Provincial Economic Development Strategies were prepared with ILO's assistance in seven governorates (Anbar, Basra, Erbil, Babel, Missan, Thiqr, and Sulaymaniyah). These include strategies for the different sectors, including agriculture, and foresee international standards for any development interventions in these sectors, including Environment Impact Assessments.

The Law of Environmental Protection and Improvement N° 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 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.

⁹ Youusif, 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.

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 2015¹⁰. 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.

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 decimated¹¹. 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

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.

¹¹ Hameed A. et al (2013) The Challenges of Water Sustainability in Iraq. Eng. & Tech. Journal, Vol. 31, Part (A) N°5.

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 2004-2011¹³

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 (52.6°C), Iraq (52°C), Saudi Arabia (52°C), Qatar (50.4°C) and Sudan (49.7°C) were among 19 countries that set new record high temperatures in 2010. The Global Environment Outlook Report (GEO 6) mentions Iraq as one of the most vulnerable countries to climate change in the region.

IFAD has financially supported ICARDA to undertake an assessment of climate change impacts in Iraq and Jordan¹⁴. 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.

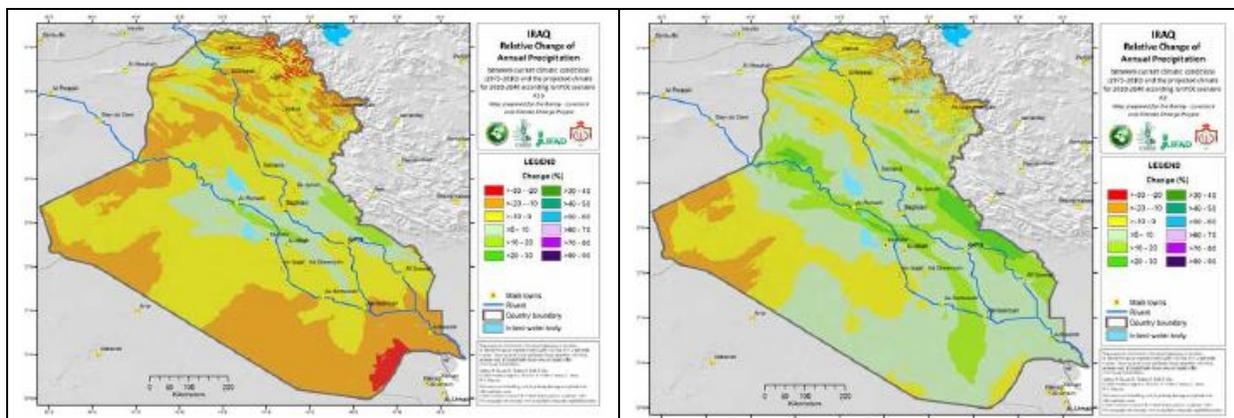
Figure 4. Relative change to annual precipitation between current climate conditions (1975-2010) and the projected climate for 2010-2040 (Left: Scenario A1b; Right: Scenario A2)¹⁵

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>

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.



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 GPCP, 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 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 2010-2040¹⁶.

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

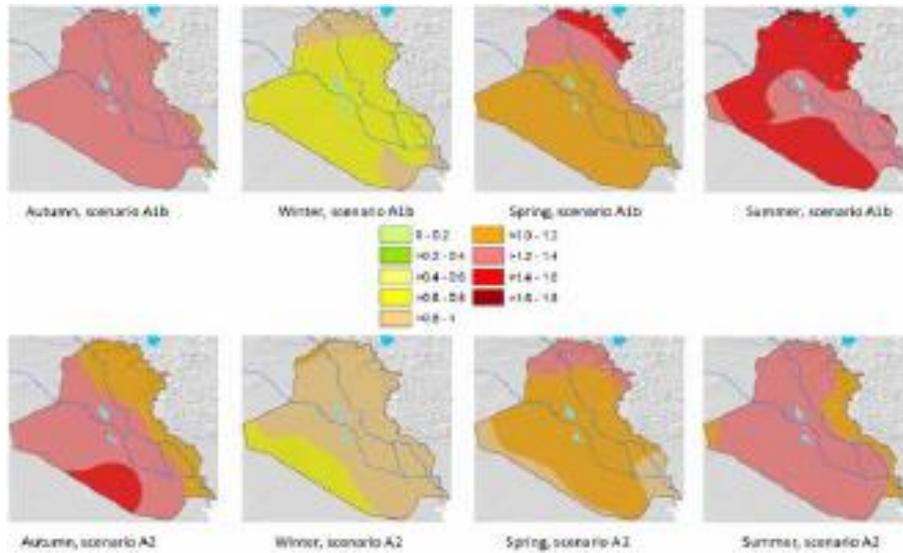
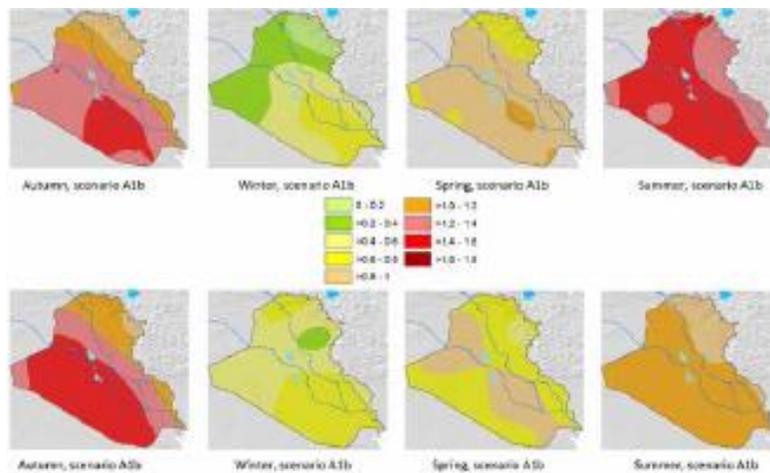


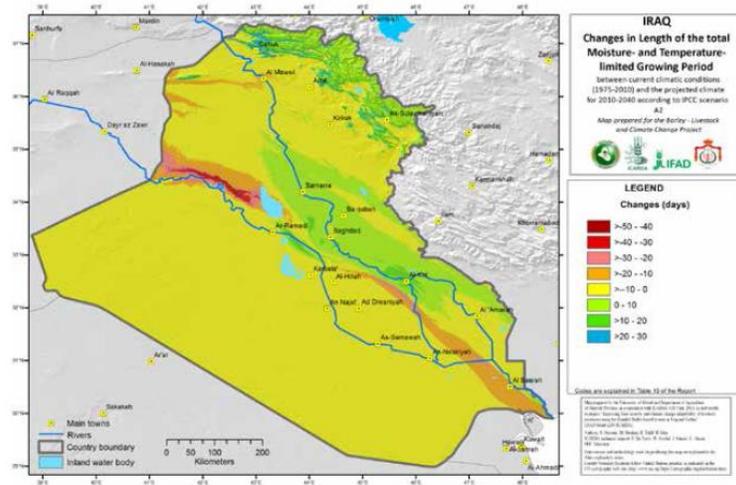
Figure 6: Absolute change in Minimum Temperature between current climate (1975-2010) and the projected climate for 2010-2040¹⁷.



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 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.

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

Figure 7. Changes in length of the total moisture- and temperature-limited growing period¹⁸



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.

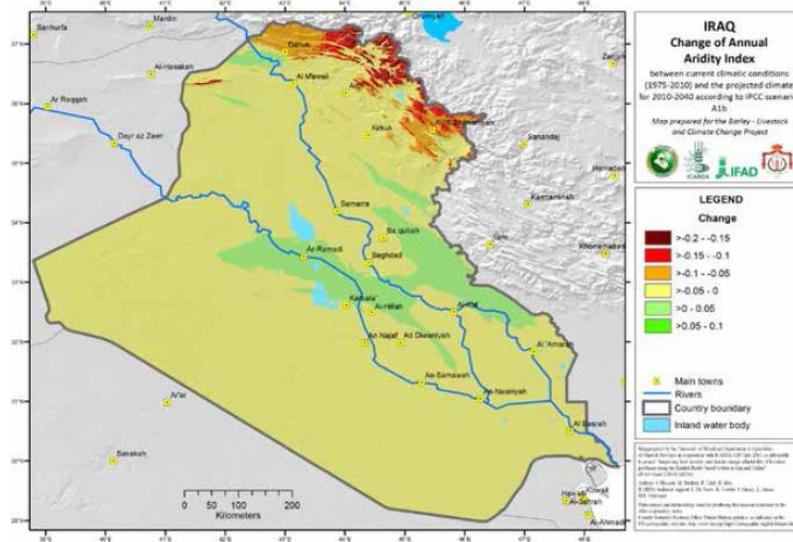
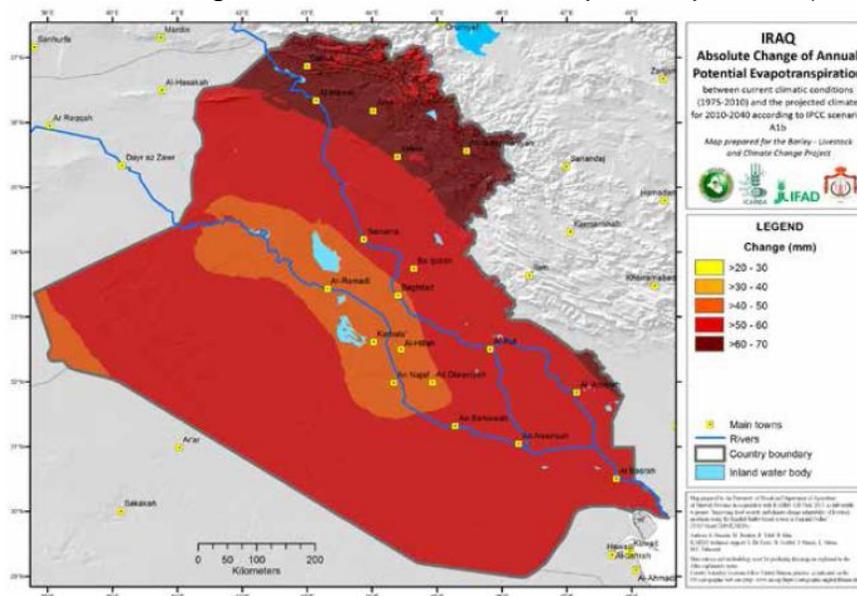


Figure 9. Absolute Change of Annual Potential Evapotranspiration (Scenario A1b)



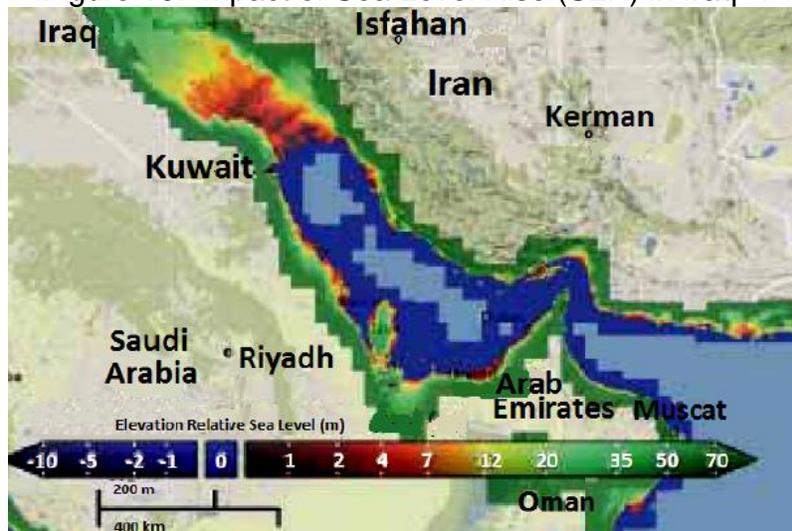
A shortage of water may arise between 2020 and 2030 in the Tigris and Euphrates rivers due to growing demand in the riparian countries. An emergency situation will develop already around 2020 because the expected annual 4 km³ of water remaining as surplus in the two rivers will not be sufficient²⁰. Since 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 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

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) N^o5.

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 Iraq²¹.



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.

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

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).

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 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%.
- 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 from 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:

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”*.

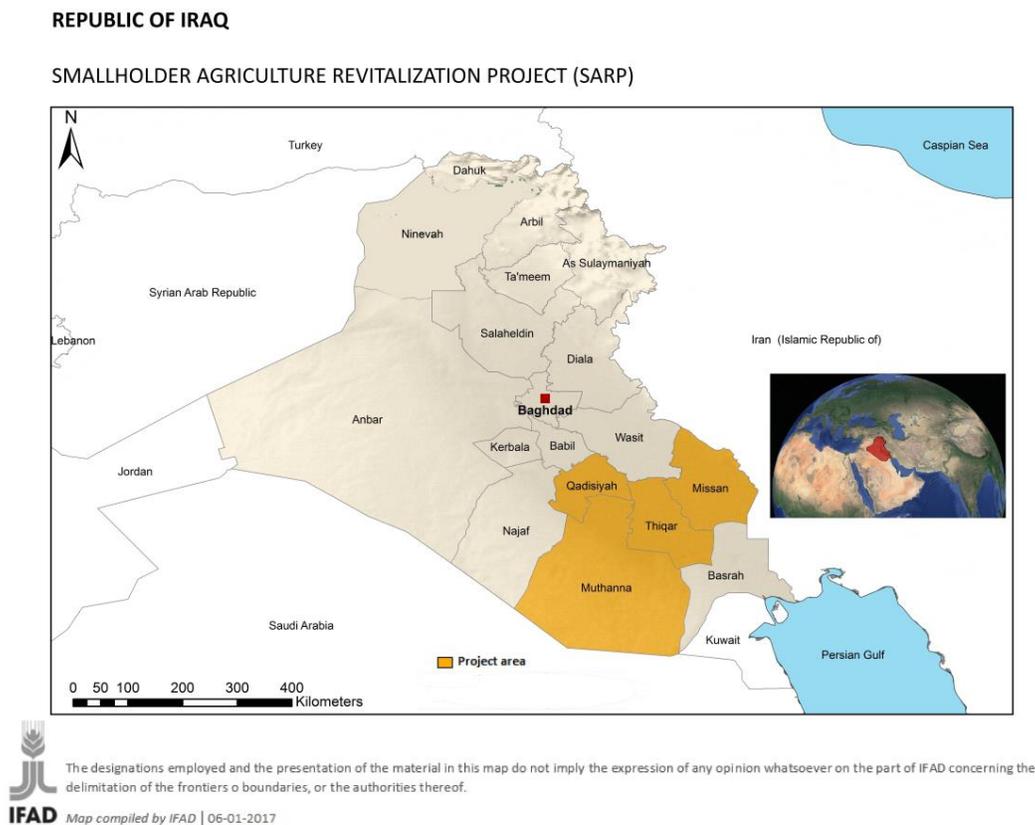
The project is designed to deal with one of the major constraints in the country that centres around the growing scarcity of irrigation water and to assist the country with strengthening its capacity at the national level for monitoring climate change patterns and providing relevant information to key 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



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 1.6°C 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-Rumaita 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. BRAC Project 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, resilient seeds, 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 in terms of management 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. Each of BRAC and SARP will have their separate Annual Work Plans and Budgets and separate bank accounts, but will both be managed through a main coordination unit in Baghdad, and 4 project management units in each Target Southern Governorate. Both projects will share the Finance, procurement and M&E staff, but BRAC will have specific staff managing the relevant activities. BRAC, 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 weevil 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 dunums²² 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

²² In Iraq 1 dunum is equal to 0.25 hectare.

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-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 analysing 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 warning 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 adaptation of 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 Department of Agricultural Extension Services needs further support to be able to directly target, discuss, deliver and monitor the packages; and would – for the off-farm elements therein – also be out of its technical depth. Therefore, local partner agencies will be engaged to target, discuss, deliver and monitor the support packages programme. To deliver the packages, the Project will, on behalf of the Governorate Directorate of Agriculture Extension, enter into agreements with service providers (e.g. NGOs) that can help target and deliver grant packages to specified farmers and groups. NGOs will be selected on the basis of their local presence, ability to identify and reach the target group and track record of the organisation in rural development.

In order to achieve a greater impact, preference will be given to supporting producer groups with crop-, livestock- and income generating packages. Through a group package, the investment cost per household is kept lower (enabling further outreach) and social cohesion and peer pressure ensures the beneficiaries exert themselves to make best use of the package. Each package is delivered under a delivery agreement which describes that the package is handed-over under the provision that the beneficiary or beneficiaries take necessary steps to make best use of the package.

Regular review of the packages and the way these are used enables the Project and its partners to gradually improve the targeting, beneficiary selection and conditions of the grants.

The Project would have specific gender disaggregated targets and budget allocations for grants that would only benefit women. Service providers with women staff will have specific targeting details in their Terms of Reference, and the M&E project staff will be monitoring the targeting prior to disbursement of the support package to ensure outreach to women and integrate gender aspects in all reports. The strong role played by NGOs coming from a humanitarian background and specializing in reaching out to women (especially female-headed households) in project implementation is expected to ensure attention to gender equality and women's empowerment.

The Project would put in place special arrangements to target youth in the same way, including setting a specific budget for grants that will only benefit youth. This would be undertaken primarily by linking with youth associations and unions. Given the high unemployment rate among youth, opportunities for vocational and enterprise training, apprenticeship and job placement would be identified with the private sector especially in ancillary services that are critical for the agriculture sector.

Targeting of women and youth will be done also through the Committee for Women and the Committee for Youth of the respective Provincial Councils in the Governorates. The identified beneficiaries will also be trained before they receive the support package, and will be provided with constant mentoring to ensure success.

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	<p>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.</p> <p>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</p>	<p>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.</p> <p>Marshland communities suffer from severe poverty, a lack of clean drinking water, health care and education facilities</p>
Economic	<p>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%.</p> <p>Livestock extension and health services, crop-livestock integration and the use of alternative animal feed resources, will increase livestock stock (increased twin rates from 5% to 24%), milk production per ewe and decrease</p>	<p>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.</p>

	<p>mortality by 47%.</p> <p>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.</p>	
	<p>Target farmers applying best practices on soil salinity management will increase yields more than 80% and their income per hectare.</p>	<p>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.</p>
Environmental	<p>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.</p>	<p>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.</p>
	<p>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%.</p>	<p>Diminished water availability together with low irrigation efficiency have increased soil salinity.</p>
	<p>Target date palm producers with the necessary equipment and skills to apply integrated pest management and organic fertilization will significantly reduce water pollution and pest/diseases problems, while having an incremental return of USD 8440 per ha.</p>	<p>The excessive use of chemical fertilizers contributes to enhance the process of eutrophication of surface and underground water courses, and the proliferation of diseases and parasites, whose development is more on</p>

		excessively fattened crops with nitrogen.
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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 directly benefit about 16,000 households (HH): 6,236 HH from BRAC and 9,764 HH from SARP. 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 (4,436 from BRAC). An additional 9,350 HH would benefit from the grant packages programme (1,800 HH from BRAC). Moreover, all BRAC/SARP 16,000 HH will directly benefit from the agro-meteorological and EWS information, and from the training activities on climate-resilient agriculture systems and technologies implemented under BRAC. 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.

Direct BRAC beneficiary households translate to 43,028 people (110,400 people for BRAC and SARP together), based on the rural household size of 6.9 people. The cost per beneficiary in BRAC project is calculated to be USD 232 (similar cost per beneficiary is calculated for IFAD SARP baseline project).

It is estimated that at least 30% of direct beneficiaries of the irrigation infrastructure rehabilitation/modernization and efficient use of irrigation water for agriculture production will be women. Approximately 40% of the 1,800 households benefiting from the grant packages programme will be women-headed households. In the case of training in income-generating activities and business management, 50% of trainees will be women.

The 9,764 HH beneficiaries of SARP can be considered indirect beneficiaries of BRAC, as the skills and capacity development that will be provided to the direct beneficiaries of BRAC on climate resilient agronomic systems and technologies, as well as the climate resilient agriculture investment and the work of the water users will spill over to the rest of the SARP project beneficiaries. Additionally, the remaining 56,480 farming HH of the 4 target governorates will indirectly benefit from the EWS information, and a number of these indirect farmers difficult to quantify will benefit from the farmer-to-farmer transfer of

knowledge about climate-resilient agricultural planning and techniques through informal peer advice and visits to BRAC farmland plots.

The total number of SARP and BRAC beneficiary households expected over the years is broken down in the following table:

Table: Direct Project Beneficiaries

Component	Estimated total number of benefitting households (HHs) (BRAC + SARP)	Estimated number of beneficiaries HHs under BRAC
Grant packages for smallholder farmers, youth and women, and farmers organizations	9,350	1,800
Irrigation modernisation and water supply to farmland plots (for estimated 33,250 dunum)	6,650	4,436
Total number of HH	16,000	6,236
Total number of people	110,400	43,028

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

<i>Irrigation system (IS)</i>	Targets	
	<i>Irrigation efficiency</i>	<i>Crop intensity</i>
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 supports 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 rely on the IFAD SARP management structure to be put in place, both at the central and Governorate levels. 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)	N° 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	Under current scenario decision-makers have limited capacity to assess CC impacts and plan suitable adaptation measures for the different agro-climatic conditions

			<p>guiding future plans and policy improvements for mainstreaming CC adaptation at cross-sectorial level.</p> <p>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.</p>	<p>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.</p>
<p>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</p>	220,000	16,000 HH ²³	<p>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.</p>	<p>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.</p>
<p>2.1. Climate-proof systems and technologies for water supply from tertiary canals up to farmland plots are implemented in the target governorates</p>	5,240,000	6,650 HH	<p>Funds for irrigation development will address 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</p>	<p>Most of the irrigation canals are 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</p>

²³ HH: household

			<p>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.</p> <p>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.</p>	<p>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.</p>
<p>2.2. The national Agro-meteorological Monitoring Network is upgraded informing early warning systems</p>	729,000	<p>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 also benefiting from the system.</p>	<p>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.</p>	<p>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 production and pollution. Budget allocated for relief will be amplifying the burden of debt of the state.</p>
<p>2.3. Climate resilient agriculture</p>	2,303,000	9,350 HH	<p>Supplemental irrigation in rain-fed areas resulted in higher yield, increased</p>	<p>Farmers can still rely on surface</p>

<p>technologies adopted by target farmers and producers' organizations</p>			<p>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. 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%.</p>	<p>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.</p>
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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)						
	Δ%	Link with the risk matrix			IRR (%)	NPV (USD M)
Base scenario					17%	5.33
Project benefits	-10%	Yield levels declines			17%	16.69
Project costs	10%				15%	12.27
Project costs	20%	Unforeseen factors that increase costs			18%	19.27
1 year lag in ben.					16%	10.24
2 years lag in ben.		Risks related to low start-up implementation capacity, staff turn over, many other public institutions involvement			18%	16.49
Output prices	-10%				14%	12.21
Output prices	-20%	Overproduction coupled w ith the weak marketing infrastructure			17%	16.40
Input prices	10%				15%	12.10
Input prices	20%	Market price fluctuations			16%	9.80
					14%	11.50

Overall computation of the Economic Rate of Return

A. PRODUCTION				D. BENEFICIARIES, ADOPTION RATES AND PHASING										Adoption rate
F I N A N C I A L	Farm models/net incremental benefits (in '000 of USD)				PY1	PY2	PY3	PY4	PY5	PY6	PY7	Total	92%	
	Milk production	Wheat Crop	Barley crop	Broad bean crop	0	3,000	3,000	3,000	3,000	0	0	12,000		
		(174)	(83)	(164.1)	0	2,700	2,700	2,700	2,700	0	0	10,800		
	PY1	1,400			0	750	750	750	750	0	0	3,000		
	PY2	3,379	26	27	35.3	0	675	675	675	675	0	2,700		
	PY3	5,257	26	27	35.3	0	750	750	750	750	0	3,000		
	PY4	5,257	39	40	48.7	0	675	675	675	675	0	2,700		
	PY5	5,257	39	40	48.7	0	500	500	500	500	0	2,000		
	PY6	5,257	39	40	48.7	0	450	450	450	450	0	1,800		
	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 (USD)	37,568	117	211	200								20,000		
NPV (USD)		33.1	0.1	0.19	0.2									
FRR (8-10%)		26%	19.3%	40.5%	26.3%									
B. PROJECT COSTS AND INDICATORS FOR LOGFRAME				E. NET INCREMENTAL BENEFITS AND COSTS										
TOTAL PROJECT COSTS (in million USD)				32.99	Base costs	24	FRU	1						
Beneficiaries				140,000	people	20,000	Households	Adoption rates	92%					
Cost per beneficiary				236	USD x person	1,649	USD x HH							
Components and Cost (USD million)				Outcomes and Indicators										
Climate Resilient Investments				12.05										
Agribusiness & Livelihood Diversification				12.2										
Project Management & Coordination				8.72										
C. MAIN ASSUMPTIONS & SHADOW PRICES														
F I N A N C I A L	Output	Yields	Price (in \$)	Input prices	Price (USD)									
	Milk production	4,350	0.50	Fertilizer	250									
	Wheat Crop	1,600	0.50	Improved seeds	800									
	Barley crop	1,200	0.50	Rural wage	1,500									
	Broad bean	1,335	1.00											
E C O N O M I C	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													
* All prices expressed in Local Currency (LC). See definition and formulas in the INSTRUCTIONS														
NPV @ 10% (million USD) 5,969 NPV @ 10% (million USD) 8,985 BRR 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 INDC. 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.

10- The National Strategy to Combat Desertification, the National Programme to Mitigate sandstorms as well as the Integrated Management of Drought in Iraq.

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 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.

E.1 Alignment between ESP/AF and SECAP/IFAD

IFAD's Social, Environmental and Climate Assessment Procedures (SECAP) were approved by the Executive Board became effective in 2015 and were updated in 2017. These procedures defined an improved course of action for assessing social, environmental and climate risks to enhance the sustainability of results based country strategic opportunities programmes (RB-COSOPs), country strategy notes (CSNs), programmes and projects. SECAP along with the guidance statements (GS) sets out the mandatory requirements and other elements that must be integrated throughout the project life cycle. The 2017 updated version: (i) draws on lessons learned in SECAP's implementation from 2015 to the present; (ii) clarifies the mandatory and non-mandatory requirements applicable to IFAD-supported investments; (iii) further aligns IFAD's environmental and social standards and practices with those of other multilateral financial institutions; (iv) reflects IFAD's complementary policies²⁴ and climate mainstreaming agenda; (v) enables IFAD's continued access to international environment and climate financing; and (vi) better aligns IFAD's programming with the General Conditions for Agricultural Development Financing²⁵. All IFAD projects entering the pipeline are subject to an environmental, social and climate risk screening, and are assigned a risk category for environment and social standards (A, B, C), and for climate vulnerability (high, moderate, low). These findings, along with subsequent analysis and assessments, must be reflected in the project's SECAP review note. Projects with environment and social category "C" and climate risk "low" do not require any further analysis.

²⁴ Including, but not restricted, to policies on targeting (2006), gender equality and women's empowerment (2012), indigenous peoples (2009). Available at: www.ifad.org/operations/policy/policydocs.htm.

²⁵ <https://www.ifad.org/documents/10180/e72d1b36-58ed-4630-b683-7b22f4075e73> See section 7.01(a)(vi)

All category “B” projects must have a SECAP review note including a matrix of the environment and social management plan (ESMP) at design stage. The identified social and environmental risks, and opportunities-management measures must be reflected in the project design and the project design report (PDR). The ESMP matrix must be integrated into the project’s implementation manual or developed as a stand-alone guidance document for the project management unit late in the design stage or early in implementation. All category “A” projects must have an ESIA at the design stage (or relevant stage of implementation). The draft and final ESIA reports, and other relevant documents²⁶ must be disclosed in a timely and accessible manner at the quality assurance stage (or other stages during project implementation).

For all projects with a “moderate” climate risk classification, a basic climate risk analysis must be conducted during the project design stage and included in the SECAP review note. Adaptation and mitigation measures must be mainstreamed into the project design and PDR. For all projects with “high” climate risk classification, an in-depth climate risk analysis must be conducted during project design and adaptation and risk-mitigation measures must be mainstreamed into the project design and PDR.

IFAD SECAP includes 14 Guidance Statements (GS) with: (i) an introduction to each subject, (ii) how the subject has been addressed in IFAD projects, (iii) the environmental, climate change and social issues linked to the subject; (iv) Criteria for environmental screening and scoping of IFAD projects; (v) potential mitigation and adaptation plans and measures for controlling adverse impacts, (vi) the international legal context. The following table provides some information about the relation between AF ESP Principles and IFAD SECAP (for further information, please visit <https://www.ifad.org/topic/gef/secap/overview>).

AF ESP Guidance Principles	IFAD SECAP GS, Guiding Values and Principles
Principle 1: Compliance with the Law	<ul style="list-style-type: none"> - SECAP requires that activities in the framework of the IFAD financed projects or programmes meet IFAD’s safeguard policy guidance, comply with applicable national laws and regulations (labour, health, safety, etc.) and international laws and treaties, and the prohibited investment activities list produced by the International Finance Corporation is adhered to. - Project design should review: (i) current national policies, legislation and legislative instruments governing environmental management health, gender and social welfare, climate change (mitigation and adaptation) and governance with their implementation structures, identify challenges, and recommend appropriate changes for effective implementation; (ii) all relevant international treaties and conventions on the environment, climate change, health, gender, labour and human rights to which the country is a signatory.
Principle 2: Access and Equity	<p>Access and Equity is a cross-cutting issue in all the 14 SECAP Guidance Statements.</p> <p>SECAP requires that projects and programmes ensure the participation of</p>

²⁶ Including environment and social management frameworks (ESMFs), draft resettlement action plans and frameworks (RAFTs), draft mitigation plans and documentation of free, prior and informed consent (FPIC) and indigenous plan (IP) consultation processes.

	<p>target groups and equitable distribution of benefits. When projects result in physical or economic displacement (affecting access and user rights to land and other resources), the borrower or grant recipient should obtain FPIC from the affected people, document stakeholder engagement and consultation process and prepare resettlement plans or frameworks. The documents must be disclosed in a timely and accessible manner at the QA or relevant implementation stage.</p> <p>GS 7 - Water</p> <p>In the case of water irrigation projects like the IFAD AF project proposal in Iraq, project design should: (i) consult all local water users, and involve beneficiaries in all stages of infrastructure development, from design, through operation and management, to rehabilitation and reconstruction; (ii) ensure equitable, reliable and sustained access to, and use and control of, water; (iii) address the gender dimensions in all stages.</p> <p>GS 11: Development of value chains, micro- and small enterprises (MSEs)</p> <p>From a social perspective, additional good practices for IFAD's support to and promotion of value chain and MSE development might include among others: (vi) favourable working conditions within newly created green jobs throughout the value chain, including in local food systems; (vii) improving workplace safety and reducing community exposure to environmental hazards and public health risks; (viii) creation of specific employment and entrepreneurial opportunities for youth, for example in supply of information or support services to the value chain; (ix) harmonization with national and international labour standards; and (x) strengthened capacity for good practices, including employment opportunities for landless and other marginalized groups.</p> <p>Other IFAD policies that support and complement this principle are: Rural Enterprise Policy, Rural Finance Policy, Private Sector Strategy, Improving Access to Land Tenure Security Policy, Gender Equality and Women's Empowerment Policy, Engagement with Indigenous Peoples Policy, Targeting Policy, Youth Policy Brief, Climate Change Strategy. Moreover, IFAD has been supporting the formulation and implementation of the Committee on World Food Security (CFS) Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (VGs), the Principle for Responsible Agricultural Investment (PRAI), the African Land Policy Framework and Guidelines, including the Guiding Principles on Large Scale Land-based Investments, along with other frameworks and guidelines aimed at the social and economic empowerment of poor rural women and men and social and economic equity more generally.</p>
<p>Principle 3: Marginalized and Vulnerable Groups</p>	<p>Marginalized and Vulnerable Groups is a cross-cutting issue in all the 14 SECAP Guidance Statements.</p> <p>A robust SECAP process requires attention to social dimensions such as land tenure, community health, safety, labour, vulnerable and disadvantaged groups, and historical factors, particularly in relation to natural resource management. It not only looks at compliance (e.g. managing potential negative impacts), but expected positive impacts and ways to maximize opportunities. To assure a good contribution to the quality of SECAP, project design should assess the socio-economic and cultural profile, including key issues relating to disadvantaged or vulnerable groups, conflict, migration, employment and livelihoods. Consultation with communities and stakeholders must be maintained throughout the project lifecycle, especially in high-risk projects. For investment projects with a projected high sensitivity to climate hazards, IFAD requires a climate vulnerability analysis which can help to improve the targeting</p>

	<p>of investment actions to include the most vulnerable and least resilient target groups.</p> <p><i>GS 13 – Physical and economic resettlement</i></p> <p>Specific attention should be given to maximizing opportunities, avoiding involuntary resettlement, enhancing gender equality and women’s empowerment and reducing vulnerability to risks/effects of climate change and variability and other project impacts. In any case, emphasis should also be on involving key stakeholders especially vulnerable groups and marginalized poor communities – including female-headed households, the elderly, or persons with physical and mental disabilities – in project design and implementation, and addressing public health concerns (e.g. HIV/AIDS). Should resettlement or economic displacement be envisaged, the FPIC and the do-not-harm principles – which are two pillars of IFAD’s Improving Access to Land Tenure Security Policy - – will be followed at all times and for all its beneficiaries for “any development intervention that might affect the land access and use rights of communities.</p> <p><i>GS 11: Development of value chains, micro- and small enterprises (MSEs)</i></p> <p>From a social perspective, additional good practices for IFAD’s support to and promotion of value chain and MSE development might include among others: (vi) avourable working conditions within newly created green jobs throughout the value chain, including in local food systems; (vii) improving workplace safety and reducing community exposure to environmental hazards and public health risks; (viii) creation of specific employment and entrepreneurial opportunities for youth, for example in supply of information or support services to the value chain; (ix) harmonization with national and international labor standards; and (x) strengthened capacity for good practices, including employment opportunities for landless and other marginalized groups.</p> <p>Other IFAD policies that support and complement this principle are: Improving Access to Land Tenure Security Policy, Gender Equality and Women’s Empowerment Policy, Engagement with Indigenous Peoples Policy, Targeting Policy, Youth Policy Brief, Climate Change Strategy, Rural Enterprise Policy, Rural Finance Policy, Private Sector Strategy.</p>
<p>Principle 4: Human Rights</p>	<p>Human Rights is a cross-cutting issue in all the 14 SECAP Guidance Statements.</p> <p>Among the Guiding Values and Principles for SECAP, there is the principle to “support borrowers in achieving good international practices by supporting the realization of United Nations principles expressed in the Universal Declaration of Human Rights and the toolkits for mainstreaming employment and decent work”.</p>
<p>Principle 5: Gender Equality and Women’s Empowerment</p>	<p>Gender Equality and Women’s Empowerment is a cross-cutting issue in all the 14 SECAP Guidance Statements.</p> <p><i>GS 11 – Development of value chains, micro- and small enterprises (MSEs)</i></p> <p>Well-designed value chain projects can drive improved natural resource management, climate resilience, gender equality, decent labor and working conditions, community health and safety, and poverty alleviation.</p> <p>Two key issues to manage in all value chain projects are (i) gender and (ii) food security (IFAD 2014). Different stages and functions of any value chain will be associated with gender-specific knowledge, assets, decision-making powers and responsibilities. Household food security and nutrition may be at risk in value chain designs that emphasize mono-cropping and commercial sales at the cost of local food access or labour demands. Additional good practices for IFAD’s support to and promotion of value chain and MSE development might</p>

	<p>include: (i) gender-sensitive approaches to vocational training, business skills development, small-scale processing infrastructure, contract development and other value chain innovations; (ii) corporate social responsibility strategies that improve women’s economic and decision-making position within value chains. Inclusion of youth is also a growing issue in value chains (UNIDO 2011), being carefully addressed in IFAD projects.</p> <p>Other IFAD policies that support and complement this principle are: Gender Equality and Women’s Empowerment Policy, Rural Enterprise Policy, Rural Finance Policy, Private Sector Strategy, Improving Access to Land Tenure Security Policy, Engagement with Indigenous Peoples Policy, Targeting Policy, Youth Policy Brief, Climate Change Strategy.</p>
<p>Principle 6: Core Labour Rights</p>	<p>Core Labour Rights is a cross-cutting issue in all the 14 SECAP Guidance Statements.</p> <p>A robust SECAP process requires attention to social dimensions such as land tenure, community health, safety, labour, vulnerable and disadvantaged groups, and historical factors, particularly in relation to natural resource management. One of the guiding values and principles for SECAP is to minimize adverse social impacts and incorporate externalities. Avoid and mitigate any potential adverse impacts on health and safety, labour and working conditions and well-being of workers and local communities.</p> <p>GS 3 – Energy</p> <p>Gender-related differences and inequalities influence the outcomes of energy planning projects. Attention should be given to women’s time and labour constraints; women should be provided with opportunities to participate in decision-making regarding the development and adaptation of fuel-efficient technologies, and with the necessary technical skills to compete with men in green job opportunities. Giving women and men access to project participation can change overall gender inequality. The harnessing of rural renewable energy sources to create a rural energy market offers many opportunities for improving gender balance: field experience shows that many activities– such as commercial distribution, rural credit, marketing, training and agricultural work for securing feedstock for bio-energies – would benefit from increased entrepreneurship and leadership of rural women in the energy value chain.</p> <p>GS 11 – Development of value chains, micro- and small enterprises (MSEs)</p> <p>With large private agribusinesses, IFAD project design teams and project implementers can refer to IFAD’s principles under Private Sector Strategy (IFAD 2011a). These principles include ensuring that large and international companies that partner with IFAD comply with social and environmental standards, and are regularly assessed through due diligence during project preparation and implementation.</p> <p>Other IFAD policies that support and complement this principle are: Gender Equality and Women’s Empowerment Policy, Rural Enterprise Policy, Rural Finance Policy, Private Sector Strategy, Engagement with Indigenous Peoples Policy, Targeting Policy, Youth Policy Brief, Climate Change Strategy.</p>
<p>Principle 7: Indigenous People</p>	<p>According to SECAP, when impacting indigenous peoples, the borrower or the grant recipient must seek FPIC from the concerned communities, document stakeholder engagement and consultation process and prepare an indigenous plan (IP). Whenever FPIC is not possible during project design, the FPIC implementation plan should specify how FPIC will be sought during early implementation. The FPIC plan and related documents must be disclosed in a</p>

	<p>timely and accessible manner at the QA or relevant stage during implementation.</p> <p>IFAD SECAP promotes the Indigenous Peoples Plan as a tool to ensure that the design and implementation of projects foster full respect for indigenous peoples' identity, dignity, human rights, livelihood systems and cultural uniqueness, as defined by the indigenous peoples themselves. It also ensures that the affected groups receive culturally appropriate social and economic benefits, are not harmed by the projects, and can participate actively in projects that affect them.</p> <p>Other IFAD policies that support and complement these principles: Indigenous People's Policy; Targeting Policy; Gender Policy; Climate Change Strategy.</p>
Principle 8: Involuntary Resettlement	<p>Two Guidance Statements are related to Principle 8: <i>GS 13 – Physical and economic resettlement; GS 8 – Dams, their safety and SECAP</i></p> <p>According to SECAP, when projects result in physical or economic displacement (affecting access and user rights to land and other resources), the borrower or grant recipient should obtain FPIC from the affected people, document stakeholder engagement and consultation process and prepare resettlement plans or frameworks. The documents must be disclosed in a timely and accessible manner at the QA or relevant implementation stage.</p> <p>Throughout the process of identification, planning, implementation and evaluation of the various elements of resettlement or economic displacement and their impacts, adequate attention will be paid to gender concerns: specific measures addressing the needs of female headed households, gender-inclusive consultation, information disclosure, and grievance mechanisms will be put in place in order to ensure that women and men will receive adequate and appropriate compensation for their losses and to restore and possibly improve their living standards.</p> <p>Other IFAD policies that support and complement this principle are: Gender Equality and Women's Empowerment Policy, Engagement with Indigenous Peoples Policy, Targeting Policy, Land Policy, ENRM Policy, Youth Policy Brief, Climate Change Strategy.</p>
Principle 9: Protection of Natural Habitats	<p>Six Guidance Statements are related to Principle 8: <i>GS 6 – Rangeland-based livestock production; GS 7 – Water; GS 1 – Biodiversity; GS 3 – Energy; GS 4 – Fisheries and Aquaculture; GS 5 – Forest Resources</i></p> <p><i>GS 7 – Water:</i></p> <p>According to SECAP, Water-related projects requires projects to: (i) assess watershed protection needs and measures to preserve surface and underground water hydrology, and ensure water quality and supply within and adjacent to the project area; (ii) avoid detrimental changes in downstream water flow; (iii) limit erosion in watershed areas, intakes, waterways and reservoirs, including by designing all infrastructure to minimise scouring, sedimentation and stagnant water and to facilitate cleaning; (iv) Explore options for rewarding communities for watershed or ecosystem services (financially and non-financially) or benefit-sharing mechanisms.</p> <p>Other IFAD policies that support and complement these principles are: Environment and Natural Resources Management (ENRM) Policy; Land Policy; Climate Change Strategy.</p>
Principle 10: Conservation of Biological Diversity	<p><i>GS 1 – Biodiversity</i></p> <p>IFAD can protect biodiversity by designing its projects appropriately, ensuring that they are implemented sustainably with full community participation, and providing sound recommendations for improving borrowing countries'</p>

	<p>agricultural policies, many of which are currently top-down. The following are the issues to be considered in this identification process: (i) Adopt an ecosystem perspective and multi-sectoral approach to development cooperation programmes; (ii) Promote fair and equitable sharing of costs and benefits from biodiversity conservation and sustainable use at all levels: local, national, regional and international; (iii) Encourage full stakeholder participation, including partnerships between civil society, government and private sector; (iv) Ensure that IFAD projects and programmes are consistent with the wider policy framework, and/or changes are made for supportive policies and laws; (v) Ensure that institutional arrangements are effective, transparent, accountable, inclusive and responsive; (vi) Provide and use accurate, appropriate, multidisciplinary information, accessible to, and understood by, all stakeholders; (vii) IFAD's investments should be sensitive to, and complement, local and national structures, processes and capacities.</p> <p>Mitigation activities to eliminate or reduce the negative impacts of a project on biodiversity should follow the following order of preference: (1) Complete avoidance of adverse impact; (2) Reduction of impacts on biodiversity where unavoidable; (3) Restoration of habitats to their original state; (4) Relocation of affected species; (5) Compensation for any unavoidable damage.</p> <p>Other IFAD policies that support and complement these principles are: Environment and Natural Resources Management (ENRM) Policy; Land Policy; Climate Change Strategy.</p>
<p>Principle 11: Climate Change</p>	<p>Climate change is a cross-cutting issue in all the 14 SECAP Guidance Statements.</p> <p>SECAP asks to incorporate climate change risk analysis into projects, which are subject to an environmental, social and climate risk screening, and are assigned a risk category for climate vulnerability (high, moderate, low).</p> <p>GS 7 – Water:</p> <p>In the case of water irrigation projects, the potential impacts of climate change on water availability should be thoroughly examined when designing any type of intervention – climate moisture index, local climate variability data and projections can be very useful in this regard. Projects in areas prone to floods, drought and other natural disasters often require explicit incorporation of climate change effects into economic analysis, including assessment of the cost of adaptation and measures for reducing vulnerability at the river basin or watershed level (World Bank, 2009). Multiple-benefit approaches or technologies that have positive impacts on climate resilience, yields and soil moisture, such as rainwater harvesting and conservation agriculture, should be promoted.</p> <p>GS 11: Development of value chains, micro- and small enterprises (MSEs):</p> <p>From a climate perspective, additional good practices for IFAD's support to and promotion of value chain and MSE development might include: (i) development of early warning systems and contingency plans for climate shocks and extreme events across the full value chain including transport and storage; (ii) introduction of protective features and reinforcements into the design of critical infrastructure to handle higher maximum water run-off and higher temperatures; (iii) inclusion of climate criteria in corporate standards and protocols; (iv) financial channels to reduce risks associated with innovation (e.g. microfinance, small grants programs, index-based weather insurance); (v) renewable energy sources to cover changing requirements for grain processing, fish drying and other value-adding activities; (vi) use of hazard exposure and crop suitability maps to inform siting of processing facilities; (vii) harmonization with national</p>

	<p>climate change policies and international commitments; (viii) strengthened capacity for good practices, including building stronger knowledge systems and institutions for ongoing adaptation to progressive climate change; and (ix) incorporation of measurable climate change mitigation practices where relevant, that reduce greenhouse gas emissions, such as agroforestry, measures to increase soil carbon, and efficiency measures in the value chain that reduce output to input ratios for materials, energy and water (IFAD 2015). Reductions in greenhouse gas emissions should be measured where technically and financially feasible. The FAO EX-ACT tool is a good example already being used in some IFAD projects.</p>
<p>Principle 12: Pollution Prevention and Resource Efficiency</p>	<p>Seven Guidance Statements are related to Principle 8: GS 6 – Rangeland-based livestock production; GS 7 – Water; GS 1 – Biodiversity; GS 3 – Energy; GS 4 – Fisheries and Aquaculture; GS 5 – Forest Resources; GS 2 – Agrochemicals.</p> <p>GS 2 – Agrochemicals</p> <p>Whenever an IFAD project includes the purchase, promotion or use of agrochemicals, environmental analysis should seek to address the following issues: (i) Identification of specific crops and their existing or potential pests requiring pest management; (ii) Identification of nationally approved and available pesticides, and management and application techniques for their judicious and effective use to protect human and environment health; (iii) Assessment of local and national capacity for the safe handling, use, storage, disposal and monitoring of agrochemicals; (iv) Development of an IPM programme for minimizing /optimizing pesticide application, including – if possible – provisions for monitoring residues on crops and in the environment; (v) Reduction of environmental impact.</p> <p>GS 7 – Water (Agriculture and domestic use)</p> <p>Issues to be addressed in the design phase: (a) Watershed protection; (b) Participation of target groups and equitable distribution of benefits; (c) Climate change. Prioritise the rehabilitation of existing irrigation schemes, the development of several small-scale irrigation schemes rather than one large system, the use of sprinkler or drip irrigation, the use of treated wastewater, and the combined use of surface and groundwater. Include early warning systems and emergency plans for extreme events. Introduce new technologies such as wastewater reuse, recycling and solar panels (UN Water, 2010).</p> <p>Other IFAD policies that support and complement these principles are: Environment and Natural Resources Management (ENRM) Policy; Land Policy; Climate Change Strategy.</p>
<p>Principle 13: Public Health</p>	<p>GS 14: Human health</p> <p>When community health is significantly affected, a health-impact assessment must be conducted and mitigation measures included in the project design.</p>
<p>Principle 14: Physical and Cultural Heritage</p>	<p>GS 9 – Physical cultural resources (PCR)</p> <p>According to SECAP, the borrower will address PCR in programmes/projects financed by IFAD in the context of the environmental and social assessment (ESA) process established by IFAD's SECAP. The SECAP prescribes general steps for programmes/ projects that apply in cases involving PCR: screening; collecting data; assessing impacts; and formulating mitigating measures.</p> <p>GS 4 – Fisheries and Aquaculture</p> <p>This is relevant to the IFAD AF Project Proposal in Iraq as far as the marshland natural and cultural World Heritage is concerned. SECAP mentions that the protection of traditional rights of poor communities to fishing grounds and fish</p>

	<p>landing sites is critical when designing projects. It is important to put in place mechanisms to facilitate access to financial resources, knowledge and technology for environmentally sound traditional fishing practices. It is also necessary to include measures for improving efficiency of fishing gear and boats, adding value to fish, cold storage and dry preservation and enhancing access to markets so as to reduce waste.</p> <p>Other IFAD policies that support and complement this principle are: Gender Equality and Women’s Empowerment Policy, Engagement with Indigenous Peoples Policy, Targeting Policy, ENRM Policy, Climate Change Strategy.</p>
Principle 15: Lands and Soil Conservation	<p>Six <i>Guidance Statements</i> are related to Principle 15: GS 5 – Forest Resources; GS 6 – Rangeland-based livestock production; GS 7 – Water (Agriculture and domestic use); GS 2 – Agrochemicals; GS 10 – Rural roads; GS 8 – Dams, their safety and SECAP.</p> <p>IFAD has demonstrated a firm commitment towards land, soil and water conservation through the awarding of specific grant funding to partner governments such as the Iraqi Government, and international organizations (e.g. CGIAR centers and research programmes; FAO) to undertake research on climate change modelling and climate change adaptation agronomic systems and technologies. IFAD has developed an Adaptation for Smallholder Agriculture Programme (ASAP) to facilitate access to information, tools and technologies that will help smallholder farmers build their resilience to climate change.</p> <p>Other IFAD policies that support and complement these principles: Land Policy; Targeting Policy; ENRM Policy; Climate Change Strategy.</p>

E.2 Compliance with relevant national standards, and the Environmental and Social Policy of the Adaptation Fund

Compliance with the Law: 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, decentralization, 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.

2013-2017 Development Plan Principles	Project Compliance
Strengthen in Decentralization, recognizing the legal personality of local administrative units and acknowledging that they have particular interests.	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

	<p>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.</p>
<p>Green Investment, by putting in place environment-friendly projects and implementing policies that limit desertification and air, water and soil pollution; revive the marshes; preserve biodiversity; and expand green spaces.</p>	<p>In support of the Green Investment policy of the government, the project will condition all agriculture production interventions to the use of the R4D demonstrated systems and technologies on soil and water conservation, risk reduction of soil erosion, salinity, and soil and water pollution. Moreover, the project will support traditional fishing and farming, including water buffalo breeding, fish farming and dairy processing in the marsh ecosystems protected under the World Heritage, to help maintain the cultural practices that help preserved the marshes.</p>
<p>Empowerment and equal opportunity with a gender approach, chief means to reduce multidimensional poverty and achieve sustainable justice.</p>	<p>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.</p>
<p>Decent work, especially for women and youth.</p>	<p>The project will give attention to targeting the women and other vulnerable groups, such as the marshlands’ people. 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</p>

	<p>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.</p>
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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).

INC Adaptation measures	Project Compliance
Raise the irrigation efficiency in irrigated agriculture through efficient irrigation technologies, the promotion of alternative crops of less water consumption, and the establishment of water users' associations.	Component 1, Outcome 1.2, Output 1.2.2, support water users' associations to effectively manage irrigation water in the target areas. Investments under Component 2, Outcome 2.3, Output 2.3.1 will support grant packages and technical support to practitioners for the adoption of efficient irrigation technologies.
Assess the performance of the irrigation and drainage infrastructure, and research and development programs to prevent pollution and losses.	Component 2, Outcome 2.1, Output 2.1.1, will assess irrigation and drainage infrastructure constraints in the target governorates, assess the environmental impacts, and implement climate-proof systems and technologies to restore efficient water supply from tertiary canals up to farmland plots.
Protect and restore desert oases as a source of ground water, grazing, and useful plant materials, and apply water harvesting techniques to benefit from rain floods.	The project will specifically address date palm production as part of the climate-resilient agriculture investments in Component 2. Component 1 will support water users' associations and restore/modernize water infrastructure to effectively manage irrigation water.
Establish agro-meteorological stations to provide relevant information and analysis of weather data.	Component 2, Outcome 2.2, Output 2.2.1 will upgrade the agro-meteorological network and develop a weather information management system to provide relevant information to users for timely response and decision-making.
Establish an effective monitoring system of weather/crop production and natural pastures conditions, including early warning systems for drought, floods, and desertification trend, awareness raising, and access to information to concerned stakeholders for timely response and decision making.	Component 2, Outcome 2.2, Output 2.2.2 will support the development of climate-risk early warning system to support farmers, herders and other concerned stakeholders.

Research and development of crop species and varieties, and livestock breeds adapted to climate change.	IFAD has provided grant funding to support regional agriculture research for development (R4D) projects developed by NARS, ICARDA, FAO and other research-based organizations, who tested and demonstrated the effectiveness of a wider range of climate change adaptation approaches and advanced technology packages. Successful results will be applied in the agriculture production and livestock grazing interventions supported by the project.
Conduct studies on climate change impact and adaptation needs for livestock and plant crops	Project Component 1, Outcome 1.1, Output 1.1.1 address capacity building needs of governmental staff on mainstreaming climate change adaptation into the agriculture sector. IFAD in partnership with ICARDA, has supported in 2015 the Government of Iraq to undertake an assessment of climate change impacts in Iraq and Jordan.
Build institutional and technical capacity on climate change and hydrological modelling, and mainstreaming adaptation measures into policy and management.	Project Component 1, Outcome 1.1, Outputs 1.1.2 and 1.1.3 address capacity building needs of governmental staff and other relevant stakeholders on climate change adaptation and risk reduction in agriculture and water management. Trainings has a ToT focus to create a critical mass of experts at the national and governorate levels able to keep training concerned actors beyond the project life.
Find different patterns of agriculture on the basis of water availability to rational consumption and prevent salinity.	IFAD has provided grant funding to support regional agriculture research for development (R4D) projects developed by NARS, ICARDA, FAO and other research-based organizations, who tested and demonstrated the effectiveness of a wider range of climate change adaptation approaches and advanced technology packages. Successful results will be applied in the agriculture production and livestock grazing interventions supported by the project.
Improve management of rain-fed agriculture by digging water wells and applying complementary irrigation.	Same as previous information.
Strengthen strategic crops storage conditions for crops like wheat and barley to address potential drought seasons.	Component 2, Outcome 2.3, Output 2.3.1, will provide grant funding and technical support to farmer groups and associations of women for climate-resilient agriculture investments, including production, post-harvesting, processing and income diversification equipment and infrastructure.
Use integrated methods for agricultural pest management and reduce reliance on pesticides and	IFAD has provided grant funding to support regional agriculture research for development (R4D) projects. Successful results will be applied in the agriculture

herbicides in agricultural systems.	production and livestock grazing interventions supported by the project. Successful results on date palm productivity under IPM, organic fertilization, and low-risk insecticide, etc., will be applied in the framework of the project (for more detail information on results and published papers, see http://hsad.icarda.org).
Establish rangeland stations to test innovative techniques to restore degraded rangelands	IFAD has provided grant funding to support regional agriculture research for development (R4D) projects. Successful results will be applied in the agriculture production and livestock grazing interventions supported by the project. Successful results on livestock and rangelands management will be applied in the framework of the project.
Stabilize and establish green belts around movable sand dunes affecting cultivated land, water infrastructure and roads	Component 2, Outcome 2.1, Output 2.1.1, will assess the environmental impacts in the irrigation and drainage infrastructure to be restored and modernized, and implement climate-proof systems and technologies for efficient water supply from tertiary canals up to farmland plots, preventing erosion and siltation problems affecting infrastructure and the supplied farmland plots.
Develop an effective system to monitor desertification and natural rangelands	Component 2, Outcome 2.2, Output 2.2.2 will support the development of climate-risk early warning system to support farmers, herders and other concerned stakeholders.
Review agriculture policies and strategies regarding climate change impacts and adaptation needs	Project Component 1, Outcome 1.1, Output 1.1.1 will support governmental staff to develop a climate change adaptation strategy for the agriculture sector.

The project also responds to 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.

MoA National Programmes	Project Compliance
(i) the national program for the use of on-farm modern irrigation systems	IFAD has provided grant funding to support regional agriculture research for development (R4D) projects developed by NARS, ICARDA, FAO and other research-based organizations, who tested and demonstrated the effectiveness of a wider range of climate change adaptation approaches and advanced technology packages. Successful results on on-farm modern irrigation systems will be applied in the agriculture production investments under Component 2, and the technical capacity of practitioners will be developed under Component 1.

<p>(ii) the national program for the improvement of wheat production</p>	<p>IFAD has provided grant funding to support regional agriculture research for development (R4D) projects developed by NARS, ICARDA, FAO and other research-based organizations, who tested and demonstrated the effectiveness of a wider range of climate change adaptation approaches and advanced technology packages. Several promising wheat lines were tested in advanced yield trials under irrigated conditions, generating 6-7 t/ha. One improved variety promoted by the initiative – Bohouth 22 – is now being disseminated by the Iraqi government to all extension centers for distribution to farmers. Project Component 2 will support investments promoting successful results.</p>
<p>(iii) the national program for the development of drought and salinity tolerant crops</p>	<p>IFAD has provided grant funding to support regional agriculture research for development (R4D) projects that tested and demonstrated the effectiveness of a wider range of climate change adaptation approaches and advanced technology packages. Successful results on soil salinity reduction and drought- and salinity-tolerant crops will be applied in the agriculture production investments under Component 2, and the technical capacity of practitioners will be developed under Component 1. See: http://icarda.org/iraq-salinity-project/teaser .</p>
<p>(v) the organic agriculture program</p>	<p>IFAD has provided grant funding to support regional agriculture research for development (R4D) projects that tested and demonstrated the effectiveness of a wider range of climate change adaptation approaches and advanced technology packages. Successful results from the “integrated pest management and organic fertilization program in Iraq” focusing on increasing yields of date palm and cereal/food legume-based production systems for smallholder farmers will be part of the project investments under Component 2 and capacity development interventions under Component 1. These production systems are considered to be the major household income sources for small farmers in the tested areas.</p>
<p>(vi) the program for the establishment of an agricultural meteorology network</p>	<p>Component 2, Outcome 2.2, Output 2.2.1 will upgrade the agro-meteorological network and develop a weather information management system to provide relevant information to users for timely response and decision-making.</p>
<p>(vii) the program for the genetic improvement of local animal breeds</p>	<p>IFAD has provided grant funding to support regional agriculture research for development (R4D) projects that tested and demonstrated the effectiveness of a wider range of climate change adaptation approaches and advanced technology packages. Successful results will be applied in the agriculture production and livestock grazing interventions supported by the project.</p>

(viii) the conservation agriculture project	IFAD has provided grant funding to support regional agriculture research for development (R4D) projects that tested and demonstrated the effectiveness of a wider range of climate change adaptation approaches and advanced technology packages. Successful results from the ICARDA-managed project has convinced numerous Iraqi farmers to adopt Conservation Agriculture (CA) techniques, helping them to reduce costs, ease soil degradation, and raise productivity. The Project will support CA technologies in the target governorates.
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The project is also compliant with the Iraqi Water Law N° 50 of 2008, which 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 AF Project will follow the MWR priorities for infrastructures in the rehabilitation/modernization of tertiary irrigation infrastructure in Component 1, and will adopt the legal requirements for water users, water exploitation and regulations.

The project is also compliant with the National Environmental Strategy and Action Plan (2013-2017), as far as Strategic Objective/SO II (Protect and Improve Water Quality), SO III (Control Land Degradation and Combat Desertification).

NESAP Strategic Objective (SO)	Project Compliance
SO II (Protect and improve water quality), Component II (Water demands), point 2.3 (Study on the impacts of CC on water demand)	Component 1, Outcome 1.2, Output 1.2.2, support water users’ associations to effectively manage irrigation water in the target areas. Investments under Component 2, Outcome 2.3, Output 2.3.1 will support grant packages and technical support to practitioners for the adoption of efficient irrigation technologies. Project Component 1, Outcome 1.1, Output 1.1.1 will support governmental staff to develop a climate change adaptation strategy for the agriculture sector, including impacts of CC on water demand and adaptation needs.
SO II, Component III (Integrated and sustainable water resource)	Component 2, Outcome 2.1, Output 2.1.1, will assess irrigation and drainage infrastructure constraints in the target governorates, assess the environmental impacts, and implement

management), point 2.5 (R&D and capacity building)	climate-proof systems and technologies to restore efficient water supply from tertiary canals up to farmland plots.
SO II, Component III (Integrated and sustainable water resource management), point 2.6 (Demand management planning)	Component 1, Outcome 1.2, Output 1.2.2, support water users' associations to effectively plan and manage irrigation water in the target areas.
SO II, Component IV (Marshlands), point 2.8. (Restoration of the marshlands and mobilization of international and regional support)	Outcome 2.3, Output 2.3.1 will support grant packages and technical support to marshland farmers, shepherds and fishermen to support local development and job creation through the maintenance and restoration of traditional farming systems and cultural practices that have supported the conservation of marshland ecosystems and biodiversity. Component 2, Outcome 2.1, Output 2.1.1, will undertake EIA for the restoration/modernization of irrigation and drainage infrastructure to avoid any negative impact in the marshland ecosystems.
SO II, Component V (Wastewater), point 2.9 (Sewage and agriculture)	Component 2, Outcome 2.1, Output 2.1.1, will undertake EIA for the restoration/modernization of irrigation and drainage infrastructure preventing the mixture of sewage and irrigation water. Outcome 2.3, Output 2.3.1 will support grant packages and technical support to promote investments in efficient water use technologies and agronomic systems that prevent soil and water pollution and salinization problems.
SO III (Control land degradation and combat desertification), Component I (Land use), Point 3.1 (Planning the best use of land), and Component II (Desertification), Point 3.3 (Combating desertification and treatment of degraded soils)	Outcome 2.3, Output 2.3.1 will support grant packages and technical support to promote investments in sustainable agriculture land and rangeland management, while preventing land degradation, soil erosion, and salinization problems.
SO III, Component IV (Natural vegetation), Point 3.5. (Conservation and sustainable use of natural vegetation)	Outcome 2.3, Output 2.3.1 will support grant packages and technical support to promote investments in sustainable agriculture and rangeland management, as well as the sustainable use and maintenance of traditional cultural practices linked to the marshlands cultural and natural heritage protected under the World Heritage.

The project is also in line with the Iraq's Social Protection Net (SPN) and the new poverty targeting initiative, a cash transfer program that targets poor and vulnerable populations. The SPN distributes monthly grants to beneficiaries based on household size. IFAD will remain abreast of SPN developments as they may have direct implications for the project.

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: The project target groups 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 these marginalized and vulnerable 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.

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.

By signing several international agreements, the Government of Iraq commits to respect, provide, and protect the human rights of all its people. UNAMI's Human Rights Office works with the Government, as well as members of Iraqi civil society, to support the promotion, respect and protection of human rights in Iraq in an impartial manner, including the rule of law, the protection of civilians from the effects of armed conflict and violence and the protection of those who are detained or being tried before the courts, the rights and protection of women, children, minorities and people with special needs, the protection of freedom of expression, as well as economic, social and cultural rights. IFAD works closely with UNAMI's Office, and other UN Funds, Agencies and Programmes to ensure that the basic rights of all Iraqis are fundamental to its activities in the Country.

AF project staff, together with other UN agencies present in Iraq, will support UNAMI to monitor the human rights situation throughout the target governorates. Information on violations will be reported to the UNAMI Office to investigate the incident and undertake a variety of actions aimed at either preventing, stopping the violations or obtaining some remedy from the relevant duty bearer on behalf of those affected. Moreover, the AF Project staff will benefit and participate in training sessions organized by UNAMI on the Special Procedures of the United Nations Human Rights Council, the review of Iraq's compliance with its international human rights obligations, and monitoring and reporting on the human rights violations.

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. Gender considerations have largely been integrated into IFAD's business processes related to project/programme cycle. Attention to gender mainstreaming in project design and implementation is supported by IFAD's policy on gender equality and women's empowerment and related approaches and tools, in particular the gender and poverty targeting checklists (See Appendix 4 – IFAD's Gender-sensitive design and implementation checklist).

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.

Positive discrimination in favour of women will be used to provide fair and equal opportunity to women who seek employment as labour and gain from the wages earned by her. The Project will not engage child labour in any of its activities. The prohibition of child labour will be part of the agreement with the beneficiaries and will be a non-negotiable provision of the agreement.

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.

The rehabilitation/modernization of the tertiary irrigation and drainage infrastructure will assess potential impacts on marshlands and other freshwater ecosystems in the target areas. The Project will follow the MWR priorities for water-related infrastructures in the rehabilitation/modernization of tertiary irrigation infrastructure in Component 1, and will adopt the legal requirements for water users, water exploitation and regulations.

Climate Change: IFAD's climate change strategy²⁷ recognizes that the speed and intensity of climate change are outpacing the ability of poor rural people and societies to cope. The current project takes cognisance of the fact that poor rural people are in the front line of climate change impacts. This is inherently an adaptation project and as such no mal-adaptation is foreseen. A detailed climate change vulnerability assessment of the

²⁷ Climate Change Strategy. IFAD, May 2010.

Agriculture Sector in Iraq was undertaken by IFAD in collaboration with WFP and the summary is available in Appendix 3. 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.

Based on the recent WFP report “Iraq, a climate analysis” funded by IFAD, climate risk in Iraq is considered Moderate, except for a region in the North-East which is considered to have a High Climate Risk. The four governorates – Muthanna, Qadisiya, Missan and Thi Qar – that make up the project area are located in the Moderate part of the country, therefore it should qualify for Moderate Risk. The project will support the implementation of priority adaptation measures already tested and validated in the field, and will help integrated in policy development at the national and sub-national levels to enhance agriculture development strategies.

The most important and required adaptation actions for the agricultural sector that will be addressed in the framework of the project are: (i) Raise the irrigation efficiency in irrigated agriculture through water infrastructure rehabilitation and adoption of micro-pressurized efficient irrigation technologies (e.g. drip irrigation, sprinkler irrigation); (ii) Identify and promote crop varieties which are low water demanding, and resistant to drought, high temperatures, pests, and soil salinity, as well as livestock breeds climate-adapted, disease-resistant and highly productive; (iii) Use integrated methods for agricultural pest management with special focus on the date palm disease, and reduce reliance on pesticides and herbicides in agricultural systems; (iv) Strengthen strategic crops storage conditions for crops like wheat and rice to address potential drought seasons; (v) Support income diversification opportunities (e.g. beekeeping, processing and marketing of agriculture produce especially dates, seed potatoes and high value vegetable crops to reduce the risk of climate shocks due to the dependence on just one economic activity, with especial focus on women and youth); (vi) Establish an effective monitoring system of weather/crop production and natural pastures conditions, including the upgrading and expansion of the Meteorological Monitoring Network, and the development of early warning systems for drought, floods, and desertification trend. Build governmental capacity to analyse and disseminate meteorological information and early warning to ensure that farmers receive this information in a timely and actionable manner; (vii) Support institutional and technical development of governmental organizations at national and local level to mainstream CC adaptation in policy development, and in agriculture practice by extension agents, individual farmers, farmers’ organization and water users’ associations.

Pollution Prevention and Resource Efficiency: No negative effects are expected from the project implementation. Conversely, the lessons learned, and best practices on adaptation measures suitable for agriculture production in the target governorates developed by NARS, ICARDA, and FAO, through several regional agriculture research for development (R4D) projects (some of them funded with IFAD grants), will be supported by the project, significantly contributing to water use efficiency, soil fertility 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. The project will specifically support the people and fragile ecosystem of the Marshlands World Heritage in the target governorate of Miysan, through the creation of job opportunities linked to the traditional cultural practices supporting biodiversity conservation in this unique environment: fishing, handicrafts, and water buffalos rearing. The project will facilitate access to financial resources, knowledge and technology for environmentally sound traditional practices supporting the conservation of the natural and cultural heritage of the marshlands.

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.

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.

The project was qualify for category B under the IFAD Social, Environment and Climate Change Assessment Procedures (SECAP), as it fully integrates the approach, measures, lessons learned, and best practices of NARS, ICARDA, and FAO, through several regional agriculture research for development (R4D) projects (some of them funded with IFAD grants), and is used as a vehicle to upscale and expand best practices in terms of environmentally-sound technologies and participatory and capacity development tools with a gender focus at the national level (institutional development and policy improvement) and at the local level.

In order to meet the environment and social objectives, SECAP recommends that the project considers the upscaling of the most promising validated technology packages

released by these R4D projects, such as: water use efficiency (e.g. comparison between drip, basin and bubbler on date palms have shown that the drip system has the highest water use efficiency) and rehabilitation of irrigation and drainage infrastructure; integrated pest management and organic fertilization practices for date palms; income diversification including apiculture, fisheries and livestock packages for women from poor households, processing of crop produce such as dates, small greenhouses for high value vegetable production, etc; post-harvesting infrastructure and equipment to reduce perishability of produce.

From the social point of view, the project aims to capture the need to promote diversification of income sources in order to support rural livelihoods and build socio-economic resilience by reducing the risk of income loss caused by climate change. The strong role played by NGOs coming from a humanitarian background and specializing in reaching out to women (especially female-headed households) in project implementation is expected to ensure attention to gender equality and women's empowerment. For farmers' participation and capacity development, the implementation of effective methodologies successfully applied in Iraq and the region, such as farmer field schools composed of a lead farmer and several satellite farmers, and/or a network of farmer field schools (FFS) both for men and women will become effective platforms for quick dissemination of technologies among project beneficiaries.

E.3 Project compliance with National Technical Standards

The project interventions, such as rehabilitation of tertiary irrigation canals up to the farmland plots and the construction of small to medium agriculture post-harvesting infrastructures (e.g. produce storage building, shelters for livestock) will follow the Iraqi laws and regulations for the environmental and social standards. These were revised through assistance of ILO during the development of Development Strategies for the different Economic Sectors, including agriculture:

- Laws of the environment protection N° 3 issued in 1997 and the published regulations. Limits for water disposal in any surface water and main sewers are subject to regulation n° (25)/1967 and its modifications published by the MoHE.
- New Environmental Framework Law N° 27 of 2009 for the Iraqi national government. The requirements for environmental assessment are legally binding.
- Regulations governing contact with archaeological sites extend also to encompass development activities like road construction and rehabilitation wherever these development activities lie with archaeological vicinity. These have articles pertaining to the protection cultural heritage.
- Regulations of MoHE on sanitary waste.
- For rubble (construction and demolition waste) the regulations, legislations and instructions of MoHE and MoCHPM (M. of Construction, Housing and Public Municipalities).
- Instructions issued by the MoHE pursuant Law N° 25 of 1967 on contamination limits and protection of rivers.
- Regulations N° 2 of 2001 on preserving water resources.
- Iraqi Federal Civil Code N° 40 that contains provisions which are broadly applicable to construction and/or designed-related contracts both for public and

private. Most of the main provisions of the Code are substantially similar to the civil law codes of countries such as UAE, Kuwait and Qatar.

The legislation related to social safeguards issued in Iraq since 2003 has focused primarily on the ratification of international conventions and protocols on issues such as natural and cultural heritage. In addition to the Iraqi laws and regulations, the ESIA will follow the policies and procedures of the Adaptation Fund, and will be monitored by IFAD prior to the implementation of any intervention.

As far the irrigation infrastructure and water use is concerned, national technical standards on irrigation management methods and use of water resources in Iraq have not changed since long time. This counts in particular for irrigation techniques. Surface irrigation for cultivated land is still the predominant method in Iraq, although the water losses in this irrigation method exceeds 60%. Moreover, decision making in the irrigation system of Iraq is quite centralised and mostly in the hands of Government staff. Also, irrigation rehabilitation/management approach and national standards in Iraq tend to focus mostly on the technical/engineering aspects of irrigation and less on the environmental aspects, especially when it comes to the rehabilitation and operation of tertiary canals. In this respect, IFAD will exert due diligence as per the ESMP developed for each irrigation infrastructure to be developed.

Although the water supply to the Governorates for irrigation and other purposes is continuously reducing, the total water needs for the schemes under BRAC is seen as very low as comparative to the discharge in the Tigris and the Euphrates. For 8,312.5 ha the peak demand is between 9 and 10 m³/sec to be divided between the river Tigris and the river Euphrates. This is a very low requirement as compared to the discharge in the rivers during the year meaning that the water availability is guaranteed.

There is an established system in the country of Iraq for the operation and maintenance of these networks and would be the responsibility of the Ministry of Water Resources. The lessons learned from IFAD's interventions in countries, similar to Iraq, which have been practicing agriculture for a very long time, is that imposing a standard set of institutional arrangement for water management practices will not deliver the expected results. It's rather more effective to put the focus on considering and upgrading of local water management arrangements, which are in place.

Consequently, one of the main purpose of BRAC is to present an example that farmers can and will manage their own irrigation scheme once it is modernized. Also, the project will demonstrate that using modern irrigation techniques could result in significant reduction of water or a significant increase in number of irrigation schemes using the same amount of water.

Therefore, the main emphasis of the project regarding irrigation rehabilitation would be to modernize existing schemes and therefore introducing on micro, drip irrigation, level basin (through laser land levelling) and furrow irrigation laser graded in small landholder irrigation systems and less emphasis on rehabilitation (although it may be so that some rehabilitation is required to ensure the water availability in the scheme). The project will

support investments in mainly to those parts of the irrigation system that is considered tertiary and field levels and will remove the bottlenecks hampering the regular access to water in the main and secondary system and promote the establishment of village based profitable agri-business.

The implementation approach of the irrigation project under BRAC can be summarized as following (a) Selected irrigation infrastructure projects are based on solid hydrological diagnostic studies for water availability (b) The focus of should be beyond rehabilitation to upgrading for reduced water use. (c) Revitalization should emphasize human capital development (both individually and organizationally), access to information, marketing alongside repair and re-design of existing infrastructure. (d) Include a participatory and transparent selection process to select potential schemes. (e) Assess the need for capacity building of irrigation engineers in modern irrigation techniques.(f) It is important to include the role of farmers and/or water user organizations in the design, construction and O&M phases of the schemes.

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.

Despite the challenging security situation in Iraq, the mission visited all 4 project Governorates and held 2 consultation workshops in each Governorate, with one of them dedicated to women who were consulted on their skills, needs and means of currently deriving their livelihoods. This consultation formed a base for defining the livelihood packages, as well as the initial target for the water infrastructure work. Further analysis of needs and design of livelihood packages and accompanying training and mentoring will be further defined during inception and will guide the specific steps for project interventions, including the determination of the specific target area within each Governorate. The project M&E team will accompany the process to ensure proper consultation and targeting.

Two consultation workshops were undertaken in each of the four Governorates. One workshop in each Governorate was dedicated to women (appendix II provides a full list of consulted people). In addition, the project design mission visited 5-6 households within each Governorate, to verify the project's approach, regarding enhancing adaptive capacities. The main priorities for the communities and households consulted with included the provision of water supply to enable them to resume production activities, post-harvest facilities and training, training on processing, and provision of income generating activities in form of a grant as their level of poverty would not allow them to access loans. They also mentioned the need for the provision of efficient irrigation techniques and agricultural production in green houses/tunnels as they are facing the dire consequences of climate change which is affecting them in terms of water availability and increased pest invasion. In the visited governorates, poor men and women's constraints include lack of capital, inadequate levels of skills, poor access to finance as well as lack of marketing expertise and linkages and for women specifically, limited population.

The result of the consultations and discussions with women and also poor households in the four governorate, it was observed that women face particular obstacles and disincentives to economic participation. Despite certain efforts directed toward enhancing women's role in the society and in the economy, there has been little actual

progress in women's economic participation in the targeted governorates in general in the rural areas there in particular. Employer preferences based on gender stereotypes and the heavy burden of social constraints on what kind of work is acceptable for women, have repercussions in the hiring process. The highest gender gap is evident in the agricultural sector where the percentage of agricultural holdings headed by women amounted to less than 2% in the visited areas. It was also observed that opportunities for both poor women and men in rural areas are limited but particularly so for women who face cultural restrictions also. Women stressed their need for income generating activities, such as processing of dairy products, tailoring, agro-food processing, small shops, embroidery, livestock rearing, vegetable and fruit farming, as well as tunnels for home-garden production where they would be able to improve the nutrition of their families and earn income through selling excess production. Many of the women do not own land and having income-generating activities that could be home-based were stressed. They also mentioned the need for training, including financial literacy.

Also, in the visited areas, the challenges youth face are exacerbated as employment opportunities tend to be even more limited in rural areas. The new generation is moving away from agriculture and there is a strong preference among young men and women for employment in the public sector. Young women in rural areas face even higher rates of unemployment and more limited opportunities due to cultural restrictions especially on mobility. Young Iraqi men do engage in agriculture to some extent, they are also involved in mobile repair shops, car mechanics, shopkeepers etc. Young Iraqi women may be involved in selling fruits and vegetables or home-based businesses. The constraints youth face, to varying degrees depending on their nationality and gender, include lack of capital, limited availability of jobs, mismatch between skills and jobs available and lack of experience in running a business. These young men and women, as well as vulnerable households will be supported with customized grants within the framework of BRAC.

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. See Appendix 2 for a full list of participants.

During the inception phase of implementation for BRAC, consultations and discussions will be entered in with all community stakeholders, involving Government, partners, NGOs, farmer and water user organisations, and beneficiary groups. This will take place once the specific communities have been selected for project intervention sites. The consultation process will be an inclusive process, in particular, in preparation for the livelihood packages to identify specific needs and needed training and mentoring. A special focus (as part of the allocated budget) will be for women and youth. Community stakeholders will be able to provide valuable inputs during the inception stage and this participation will further refine the project targeting and better define the specific steps for intervention.

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	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

	<p>the regular access to water for agriculture production.</p> <p>SARP will provide training to key stakeholder staff and farmers in modern water and irrigation management techniques.</p>	<p>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.</p> <p>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.</p> <p>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.</p> <p>BRAC will provide training to governmental staff, WUAs, extension agents, researchers, NGO and lead farmers on CC adaptation in water management and agriculture production.</p>
<p>SARP Component 2: Agriculture & Livelihood Diversification</p>	<p>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.</p>	<p>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.</p> <p>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</p>

	<p>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 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.</p>	<p>technologies, integrated pest management, the use of salinity- and drought-resistant crop species and varieties, among others.</p> <p>Service providers (including extension agents, researchers, financial institutions) will be trained on the adaptation benefits of climate-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.</p> <p>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).</p>
<p>SARP Project Management Framework</p>	<p>SARP will have a Project Steering Committee (PSC) at the National Level which would be led by the Deputy-Ministry of Agriculture.</p> <p>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.</p> <p>SARP will have a strong focus on M&E, regularly capturing results through innovative techniques, including geo-referencing.</p>	<p>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.</p> <p>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.</p> <p>BRAC ESI Screening and ESMP methodology will be applied to all SARP activities requiring assessment of environmental and social impacts.</p> <p>BRAC will define and monitor climate change adaptation indicators fully embedded in SARP M&E system.</p>

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 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).

The project corresponds to Category B since the environmental and social assessment of some project activities – namely the project investments on irrigation infrastructures and marketing infrastructures require the implementation of ESI screening and ESMP.

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
<i>Compliance with the Law</i>	X	
<i>Access and Equity</i>	X	
<i>Marginalized and Vulnerable Groups</i>		X
<i>Human Rights</i>	X	
<i>Gender Equity and Women’s Empowerment</i>		X
<i>Core Labour Rights</i>		X
<i>Indigenous Peoples</i>	n.a.	
<i>Involuntary Resettlement</i>	n.a.	
<i>Protection of Natural Habitats</i>	X	
<i>Conservation of Biological Diversity</i>	n.a.	
<i>Climate Change</i>	X	

<i>Pollution Prevention and Resource Efficiency</i>		X
<i>Public Health</i>	X	X
<i>Physical and Cultural Heritage</i>		X
<i>Lands and Soil Conservation</i>		X

As earlier mentioned, consultation was undertaken with a broad range of stakeholders, including local communities, CBOs, village councils (See Appendix 2) 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, from which 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. These community-level consultations have included participatory perception exercises to capture the views of elders, youth, women, men and community leaders in order to understand local climate, environmental and social threats as well as adaptation opportunities and solutions. 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

No further assessment of potential impacts and risks is required for compliance with the law, since 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, among others. As mentioned in section E.2:

- The project responds: (i) to the agriculture development and environmental goals and principles of the Development Plan (2013-2017); (ii) to the MoA National Program for the Use of On-farm Modern Irrigation Systems, the NP for the Improvement of Wheat Production, the NP for the Development of Drought and Salinity Tolerant Crops, the NP for Organic Agriculture, the NP for the Establishment of Agriculture Meteorological Network, the NP for the Genetic Improvement of Local Animal breeds, the NP for Conservation Agriculture.
- The project is complaint with: (i) the Iraqi Water Law N° 50 (2008) that sets the order of priority for water exploitation, defines the pathways to define, develop, grow, and utilize water resources in Iraq, and also details other aspects of water regulation, including ownership, management responsibilities, licensing, resource preservation from pollution, and trans-boundary water resource management; (ii) the Strategy for the Sustainable Use and Integrated Management of Water Resources and Land for 2035 that defines priorities for irrigation water infrastructures and legal requirements for the establishment of water users' associations (WUAs), water exploitation regulations.
- The project is compliant with the National Environmental Strategy and Action Plan (2013-2017) as far as Strategic Objective/SO II (protect and improve water quality; assess impacts of climate change on water demands; integrated and sustainable

water resources management and support to WUAs; restoration of marshlands; grant packages for investments in efficient water use technologies and agronomic systems to prevent pollution and salinization), SO III (control land degradation and combat desertification through grant packages and technical support for investments in sustainable agriculture and rangeland management, the maintenance of traditional cultural practices linked to the marshlands world heritage).

- The project is compliant with the Iraq's Social Protection Net (SPN) and the new poverty targeting initiative, a cash transfer program that targets poor and vulnerable populations through grants to beneficiaries based on household size. IFAD will remain abreast of SPN developments as they may have direct implications for the project.
- The project specifically 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 (see Appendix 2) during the development of the full project proposal, to ensure that no legal issues arise and that all relevant legal requirements are met. In this sense, the project leading agency (MoA) and steering committee members (MoA, MoHE, MoWR, MoP28) will provide guidance to ensure that all project interventions comply with the law:

- The MoWR will be responsible for ensuring water management issues, including the application of the national technical standards and regulations regarding the rehabilitation and maintenance of the tertiary irrigation and drainage infrastructure (project Component 2, Outcome 2.1, Output 2.1.1), and the strengthening and/or establishment of water users' associations for the effectively management and efficient use of irrigation water (project Component 1, Outcome 1.2, Output 1.2.2). MoHE will be responsible for ensuring compliance with the National Environmental Strategy, in terms of avoidance of potential negative impacts from the rehabilitation and maintenance of tertiary canals and drainage systems, and water use in the preservation of marshlands, as well as in the promotion of local development opportunities for the marshland people in line with the traditional cultural practices linked to the marshlands world heritage (project Component 2, Outcome 2.3, Output 2.3.1). In any case, the project will not be involved in large infrastructure rehabilitation issues, but just in the smaller scale tertiary canals up to the farmland plots, with very limited environmental risks.
- The MoHE and MoA will be responsible for ensuring compliance with the climate change adaptation priorities and proposed measures included in the INC to the UNFCCC, that will guide and condition farmers' applications for small grant packages (project Component 2, outcome 2.3, Output 2.3.1) for production, post-harvesting, processing and income-diversification. Farmer's investments in the framework of the project will support the transfer and replicability of successfully tested and demonstrated climate change adaptation approaches and technology packages developed by NARS, ICARDA and FAO among others, and partly co-financed by IFAD. The tested and demonstrated climate-resilient agronomic systems and technologies that are suitable to the Iraqi context served to define the strategies,

²⁸ Ministry of Agriculture (MoA), the Ministry of Health and Environment (MoHE), the Ministry of Water Resources (MoWR), and the Ministry of Planning (MoP).

recommendations and priorities for climate change adaptation included in the ICN and other related policy documents. The capacity development interventions for the target beneficiaries (Output 1.2.1, Output 1.2.2) and service providers (Output 1.1.3) will ensure the transferring of know-how for planning and implementing the demonstrated agronomic practices and technologies recommended by the Iraqi policies on climate change adaptation.

- The MoA will be responsible for ensuring compliance with the National Program for the Establishment of Agriculture Meteorological Network, as far as the project interventions for the upgrading of the national agro-meteorological network and development of the meteorological information management system (Output 2.2.1). The MoA and MoHE will ensure compliance with the INC as far as the recommendations to develop early warning systems (Output 2.2.2) are concerned.
- Training on climate change adaptation to MoA and MoHE governmental staff in charge of drawing up a climate change adaptation strategy for the agriculture sector will enhance compliance between national legislation and international commitments, and will strengthen the programmatic and analytical capacity of the team of young specialists at the Ministry of Agriculture in charge of the Meteorological Monitoring Network.

The project will have a positive impact to the principle “Compliance with the Law”, since Output 1.1.2 will result in institutional and technical capacity development of relevant staff at MoHE and MoA in charge of drawing up a climate change adaptation strategy for the agriculture sector.

Access and Equity

No further assessment of potential impacts and risks is required for compliance access and equity, since the project 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 follow AF and IFAD SECAP Guidance Statements on access and equity, which in the case of water irrigation projects requires: (i) consultation with all local water users, and involvement of beneficiaries in all stages of infrastructure development, from design, through operation and management, to rehabilitation and reconstruction; (ii) insurance of equitable, reliable and sustained access to, and use and control of, water; (iii) addressing the gender dimensions in all stages to make infrastructure projects more gender-responsive by addressing the needs and constraints of both women and men.

The project will 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 were pursued as key cross-cutting themes in the project design.

Marginalized and vulnerable groups

The project targets the rural areas of the four poorest governorates in Iraq, where small-scale farmers and livestock producers are the most marginalised households with unemployed young men and women being the most vulnerable. Marginalized and vulnerable groups in these governorates fall in the categories of women and women-headed households, youth unemployed, IDPs and returnees, and communities living in the marshland areas. Qualitative data shows that income levels and sources of agricultural income vary considerably by geographic location, with reliable access to a source of water as one of the main determinants of the presence of farming activities.

A targeting specialist was part of the design team, who did a poverty, targeting and gender assessment in the targeted governorates. The specialist collected information and undertook consultations with a number of marginalized and vulnerable members of the local communities – women, elderly people, young unemployed, marshland people, displaced people – to understand their socio-economic constraints, and identify the most suitable specific adaptation activities that can benefit these groups. Because of the high heterogeneity and poorly documented quantitative data of these groups, it was not possible at the project design stage to quantify in a detailed manner the smallholder farmers typologies throughout the target areas in the four target governorates. In order to overcome potential impact and risks related to this ESP principle, the inception phase of the project will include the development of a detailed baseline assessment that will provide missing data, further refine these groups, and identify specific activities and suitable climate-resilient investments to target them, including capacity development to help minimize the imposition of disproportionate adverse climate change impacts on these groups. The implementation entity will establish synergies and partnerships with local NGOs who are specialized in working with vulnerable communities in Iraq, mainly women and marshland people, and humanitarian organizations such as IOM (currently working with 150 staff who are collecting and updating information on a daily basis on internally displaced people), WHO, WFP, and UNICEF, the last one with high experience in providing social sector services to the people of marshlands. One of the project's potential partner NGOs, 'Nature of Iraq', is specialised in working in the marshlands and has been exploring economic opportunities with the different tribes people inhabiting this fragile and unique ecosystem and world heritage site.

The specific project target groups are marginalized and vulnerable groups. Therefore, the activities proposed in the project, far from being a potential negative impact, are aimed at increasing the adaptive capacity and improving the socio-economic conditions of these groups. Grant packages for vulnerable farmers and marginalized marshland people (Output 2.3.1) will support investments in agriculture infrastructure, equipment and tools to reduce land degradation, improve soil conservation and fertility, water use efficiency, and pest management, resulting in higher productivity and a more diversified local economy that will make these population groups more resilient. The project investments in the rehabilitation and maintenance of tertiary irrigation canals and drainage system (Output 2.1.1) will not have a negative impact for marginalized and vulnerable groups, on the contrary will facilitate access to irrigation for an efficient use of water positively influencing their production capacity. Although tertiary irrigation does not involve large infrastructure the project will undertake ESI Screening and ESMP preparation (see Appendix 1) for each irrigation scheme to ensure the selection and

implementation of climate-proof infrastructure and avoid any potential impact on the marshland ecosystems and cultural heritage in the specific case of Thi Qar and Miysan governorates. Ad-hoc training programs and technical support addressing the specificities of the different marginalized and vulnerable groups (i.e. women, young unemployed, marshland people) will increase their adaptive capacity to effectively adopt climate-resilient agronomic practices and technologies suitable for their farmland areas.

The project design includes a monitor program to track progress and impact of project activities on the environmental and socio-economic conditions of the target marginalized and vulnerable groups with a gender disaggregated system. The implementation entity will collaborate with IOM to monitor humanitarian cases met during implementation, and who are not receiving any government support, to be linked to IOM community stabilization program.

Human Rights

No further assessment of potential impacts and risks is required for compliance with human rights, since the project is designed to respect and adhere to the requirements of all relevant conventions on human rights in compliance with ESP. Among the Guiding Values and Principles for IFAD/SECAP, there is the principle to “support borrowers in achieving good international practices by supporting the realization of United Nations principles expressed in the Universal Declaration of Human Rights and the toolkits for mainstreaming employment and decent work”.

By signing several international agreements, the Government of Iraq commits to respect, provide, and protect the human rights of all its people. UNAMI’s Human Rights Office works with the Government, as well as members of Iraqi civil society, to support the promotion, respect and protection of human rights in Iraq in an impartial manner, including the rule of law, the protection of civilians from the effects of armed conflict and violence and the protection of those who are detained or being tried before the courts, the rights and protection of women, children, minorities and people with special needs, the protection of freedom of expression, as well as economic, social and cultural rights. IFAD works closely with UNAMI’s Office, and other UN Funds, Agencies and Programmes to ensure that the basic rights of all Iraqis are fundamental to its activities in the Country.

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.

The project implementation entity, together with other UN agencies present in Iraq, will support UNAMI to monitor the human rights situation throughout the target governorates. Information on violations will be reported to the UNAMI Office to

investigate the incident and undertake a variety of actions aimed at either preventing, stopping the violations or obtaining some remedy from the relevant duty bearer on behalf of those affected. Moreover, the project staff will benefit and participate in training sessions organized by UNAMI on the Special Procedures of the United Nations Human Rights Council, the review of Iraq's compliance with its international human rights obligations, and monitoring and reporting on the human rights violations.

Gender Equity and Women's Empowerment

The IFAD's poverty targeting and gender sensitive design and implementation guidelines updated in January 2013 were also completed for the Project. A targeting and gender specialist was part of the design team, who did a poverty, targeting and gender assessment in the targeted governorates. 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.

In order to overcome potential impact and risks related to this principle, 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. Gender considerations have largely been integrated into project design by a gender and targeting specialist, who did a poverty, targeting and gender assessment in the targeted governorates. Specific gender objectives, activities, dis-aggregated targets and budget allocations were defined, and service providers with women staff to ensure outreach to women and integrate gender aspects in all interventions were identified. Project investments on tertiary irrigation infrastructure (Output 2.1.1), early warning systems (Output 2.2.2), and grants for agriculture production, processing and marketing equipment (Output 2.3.1) will have a gender focus to make sure women needs and concerns are incorporated and equitable distribution of funding to support women groups occur. Capacity development and technical support under Component 1 will also address the specificities of women development needs in terms of technical skills, job opportunities and entrepreneurial skills. Attention to gender mainstreaming in project design and implementation is supported by IFAD's policy on gender equality and women's empowerment and related approaches and tools, in particular the gender and poverty targeting checklists (See Appendix 4 – IFAD's Gender-sensitive design and implementation checklist).

In order to overcome potential impact and risks related to this ESP principle, the inception phase of the project will include the development of a detailed baseline assessment that will provide missing data, further refine women groups, and identify specific activities and suitable climate-resilient investments to target them, including capacity development to help minimize the imposition of disproportionate adverse climate change impacts on these groups. Under Component 1, the selection of productive infrastructure will need to be endorsed – separately – by women. Component 2 is the main vehicle of implementing the BRAC gender strategy as it is focused on the

economic empowerment of women. Women will be benefitting from at least 50% of the value of the livelihood packages.

The Committee for Women and the Committee for Youth of the respective Provincial Councils in the Governorates will play an important role in targeting women and youth. Women's representation as elected Councillors on the Provincial Councils is increasing. In Muthanna, for example, seven out of 26 Councillors are women and the chairlady of the committees for women, youth, and NGOs, is a very active and knowledgeable lady, a true resource person for the women of the Governorate.

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. The project will work with NGOs specifically dedicated to working with vulnerable women (female-headed households, divorcees and widows).

Core Labour Rights

Iraq has been a member of ILO since 1932 and has ratified 66 ILO Conventions, including seven of the eight fundamental Conventions. Since 2004, the ILO and Iraq's government, workers' organizations and employers' organizations have worked closely as part of the post-war reconstruction effort to bolster decent work and develop the labour market across the different areas of the country. Currently, ILO is supporting the Government of Iraq in drafting its new social security law, which, once adopted, will ensure equality between public and private sector workers regarding maternity leave and maternity benefits, will reduce differences between the pensions of private and public sector workers, will cover employment injury benefits as well as a number of social and cultural services, thereby contributing to the support of the private sector and the support of workers' 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. The implementing entity will collaborate with ILO and take advantage of ILO's expertise, relevant documentation, Vocational Training Centres and Business Information Centres distributed in the Iraqi governorates, to foster women and youth entrepreneurship in the project areas.

Positive discrimination in favour of women will be used to provide fair and equal opportunity to women who seek employment as labour and gain from the wages earned by her. The Project will not engage child labour in any of its activities. The prohibition of

child labour will be part of the agreement with the beneficiaries and will be a non-negotiable provision of the agreement.

Potential negative impacts to workers conditions linked to infrastructure development works under Output 2.1.1 and Output 2.3.1 are: (i) potential workers accidents; (ii) adverse impacts to the health and daily life of workers and residents due to the increase of noise, deterioration of air quality, aesthetic problems and traffic congestion. Project ESI Screening and ESMP to assess environmental and social impacts from planned infrastructures will include mitigation measures to ensure workers conditions.

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

The inefficient and excessive use of water resources and agro-chemicals have a major impact on the natural habitats – namely the dry up of marshlands – resulting in habitat loss, soil and water – superficial and underground – pollution and salinization, soil erosion, the proliferation of diseases and parasites, and the abandonment of degraded farmland areas.

Damage to natural habitats and threats to biological diversity as a result of the project implementation are unlikely. Conversely, the project objectives and activities are designed to support the sustainable management of water, soil, and fishing that will have a positive impact in the targeted farmland areas and rangelands (in terms of investments for improving soil fertility and water use efficiency, and reducing soil and water salinity and pollutants), and in the environmental quality of the fragile marshlands habitats designated as World Heritage Site which are part of the project area in the target governorate of Miysan. Project investments for agriculture production (Output 2.3.1) will only support equipment, tools and inputs that have demonstrated their effectiveness in terms of soil and water conservation and pollution reduction. In this sense, the project complies with the MoHE and MoA priorities on sustainable agriculture production and will transfer demonstrated agronomic systems and technologies that are suitable for the target areas. The rehabilitation of the tertiary canals (Output 2.1.1) in the targeted irrigation schemes will follow ESI screening and ESMP to ensure environmental sustainability, preventing any potential impact in the marshland habitats. Investments (Output 2.3.1) supporting the vulnerable population of the marshlands through the creation of job opportunities linked to the traditional cultural practices – traditional

fishing, handicrafts, and water buffalos rearing – will have a positive impact on the habitats and biodiversity.

Climate Change

According to the INC it is likely that the adverse effects of climate change (increase in mean annual temperature up to 1.5 °C by 2040, together with precipitation decline, especially during the growth cycle of winter crops; shortage of water in the Tigris and Euphrates rivers causing higher soil and water salinity) would have a major impact on the Iraqi agricultural production and the rural population livelihoods in the absence of suitable adaptation strategy, objectives and measures. The government has already identified priority adaptation measures to cope with climate change predictions, 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.

No further assessment of potential impacts and risks is required for compliance with climate change, since 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 (summary available in Appendix 3), and this assessment provided guidance into project design and planned adaptation activities. The project will provide financial, capacity development and technical support to smallholder farmers to help them apply the already tested and demonstrated 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). The project will not provide or install infrastructure or appliances that result in increased greenhouse gases emissions.

The following table provides information about: (i) the climate-resilient investments identified by the Iraqi government as priority adaptation measures, and supported by the project; (ii) the positive and negative impacts from each type of investment; (iii) the investments requiring ESI Screening that will be assessed in the project ESMP (See Appendix 1).

Project Output	Type of investments	Potential impact and risks	ESI Screening & ESMP
Output 2.1.1	<ul style="list-style-type: none"> Rehabilitation and/or construction of small scale tertiary canals up to farmland plots 	<ul style="list-style-type: none"> Positive impact: (i) increase in water supply and quality to meet local population needs; (ii) increase production capacity in farmland areas; (iii) support the implementation of efficient irrigation technologies with positive effect in agriculture production and reduction of salinity problems; (iv) increase local job opportunities. 	Yes

		<ul style="list-style-type: none"> Potential negative impacts: (i) dust emissions generated from loading and unloading of materials; (ii) erosion of exposed soils; (iii) generation of debris and pollutants from the breaking of existing degraded structures and backwash water that might affect land and workers health; (iv) use of potentially harmful materials (e.g. materials containing PCB); (v) potential workers accidents; (vi) potential public safety concerns associated with the excavation works; (vii) adverse impacts to the health and daily life of workers and residents due to the increase of noise, deterioration of air quality, aesthetic problems and traffic congestion; (viii) potential contamination of soil and water due to spills, leakage from fuel storage, wrong dosage of chemicals; (ix) unsustainable use of water with effects on marshland and river ecosystems and fishing activities. 	
Output 2.2.1	<ul style="list-style-type: none"> Agro-meteorological stations 	<ul style="list-style-type: none"> Positive impact: 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. 	Not needed
Output 2.3.1	<ul style="list-style-type: none"> Efficient irrigation technologies (e.g. drip irrigation) 	<ul style="list-style-type: none"> Positive impact: increase of production with highest water use efficiency and much lower water consumption; soil salinity reduction. 	Not needed
	<ul style="list-style-type: none"> Conservation agriculture systems and technologies (permanent soil cover through mulching, no-till or mini-till, crop rotation and diversification) 	<ul style="list-style-type: none"> Positive impact: increase soil moisture and water infiltration, reduce runoff erosion risk, increase soil organic matter and fertility, reduce risk of soil and water pollution, reduce pests, reduce costs from fuel, machinery and agro-chemicals, increase carbon-sequestration. 	Not needed
	<ul style="list-style-type: none"> Integrated pest management and organic fertilization (namely for date palm production) 	<ul style="list-style-type: none"> Positive impact: Reduction of pollution and pest problems with higher productivity 	Not needed

	<ul style="list-style-type: none"> • Beekeeping equipment for production and product diversification 	<ul style="list-style-type: none"> • Positive impact: increase crop pollination, enhance natural habitats, diversify income opportunities 	Not needed
	<ul style="list-style-type: none"> • Integrated crop-livestock production system 	<ul style="list-style-type: none"> • Positive impact: increase soil organic matter and fertility, reduce the use of pesticides, diversify production 	Not needed
	<ul style="list-style-type: none"> • holistic packages to improve sheep flocks' reproductive performance and reduce winter-feeding gap through forage production based on drought- and salinity-resistant species and varieties 	<ul style="list-style-type: none"> • Positive impact: increase fertility rates and productivity; increase adaptability of selected breeds and crop species/varieties; reduce pressure on natural rangelands. 	Not needed
	<ul style="list-style-type: none"> • Construction of shelters for livestock 	<ul style="list-style-type: none"> • Positive impact: reduce the risk of flocks' heat stroke and other climate-risks. • Potential negative impact: (i) dust emissions generated from loading and unloading of materials; (ii) generation of debris and pollutants from the construction materials and backwash water that might affect land and workers health; (iii) use of potentially harmful materials (e.g. materials containing PCB); (iv) potential workers accidents; 	Yes
	<ul style="list-style-type: none"> • Marketing infrastructure (e.g. cold storage, grading, processing and packing facilities) 	<ul style="list-style-type: none"> • Positive impact: reduce the perishability of the produce; diversify production; create job opportunities. • Potential negative impacts: (i) dust emissions generated from loading and unloading of materials; (ii) generation of debris and pollutants from the construction materials and backwash water that might affect land and workers health; (iii) use of potentially harmful materials (e.g. materials containing PCB); (iv) potential workers accidents; (v) potential public safety concerns associated with the construction works; (vi) adverse impacts to the health and daily life of workers and residents due to the 	Yes

		increase of noise, deterioration of air quality, aesthetic problems and traffic congestion; (vii) potential contamination of soil and water due to spills, leakage from fuel storage, wrong dosage of chemicals.	
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Pollution Prevention and Resource Efficiency

Pollution – water pollution and salinization – in the target areas is a consequence of mal-adaptive agriculture and livestock management practices and the over-exploitation of water resources, which are exacerbated by climate change impacts. Irrigation water is inefficiently used with excessive consumption causing water shortage and pollution problems.

ESI screening and ESMP will ensure the prevention of potential negative impacts from pollution and inefficient use of water resulting from the rehabilitation of the tertiary irrigation infrastructures and irrigation water use (Output 2.1.1) and for the construction of marketing infrastructures (Output 2.3.1). Project ESMP will address pollution prevention, water conservation needs and efficient water use at the sub-basin levels of the target governorates where the irrigation schemes are located. These will be part of the assessments undertaken during the inception phase along with the hydrological studies related to the water infrastructure rehabilitation. ESMP will be developed at inception stage, consulted upon with all relevant stakeholders and shared with the Adaptation Fund. Project Output 1.2.2 will support the creation and institutional development of water users in the target irrigation schemes to ensure equitable irrigation water distribution and efficient use.

No negative effects are expected from the soft investments for agriculture production planned under the grants (Output 2.3.1). Conversely, the adaptation measures for agriculture production supported by the project will significantly contribute to efficient water use, soil and water salinity control and desalinization, and soil & water conservation through the application of agronomic systems and technologies tested and validated by the National Agricultural Research System (NARS) and other partners (e.g. ICARDA, FAO) under several regional agriculture research for development (R4D) projects (some co-financed by IFAD grants inclusive of Iraq). Marshlands will indirectly benefit from the sustainable management of soil, water and fishing resources in these vulnerable areas.

Public Health

Public health impacts linked to agriculture development in the project areas are mainly related to water scarcity and soil and water pollution. As mentioned in the Principle “Pollution Prevention and Resource Efficiency”, the project ESI screening and ESMP will ensure the prevention of potential negative impacts from pollution and inefficient use of water resulting from the rehabilitation of the tertiary irrigation infrastructures and irrigation water use (Output 2.1.1) and for the construction of marketing infrastructures (Output 2.3.1). Project ESMP will address pollution prevention, water conservation

needs and efficient water use at the sub-basin levels of the target governorates where the irrigation schemes are located. These will be part of the assessments undertaken during the inception phase along with the hydrological studies related to the water infrastructure rehabilitation. ESMP will be developed at inception stage, consulted upon with all relevant stakeholders and shared with the Adaptation Fund. Project Output 1.2.2 will support the creation and institutional development of water users in the target irrigation schemes to ensure equitable irrigation water distribution and efficient use for both agriculture and public health. In this sense, the project will have a positive impact in improving public health (e.g. increased availability of water, and water pollution reduction). Partnership with humanitarian organizations in the target governorates will have a synergetic positive impact on public health and safety.

Potential negative impact to public health linked to infrastructure development works under Output 2.1.1 and Output 2.3.1 are: (i) generation of dust, debris and pollutants from the breaking of existing degraded structures and backwash water that might affect land and workers health; (ii) use of potentially harmful materials (e.g. materials containing PCB); (iii) potential public safety concerns associated with the excavation works; (iv) adverse impacts to the health and daily life of workers and residents due to the increase of noise, deterioration of air quality, aesthetic problems and traffic congestion; (v) potential contamination of soil and water due to spills, leakage from fuel storage, wrong dosage of chemicals. Project ESI Screening and ESMP to assess environmental and social impacts from planned infrastructures will include mitigation measures to ensure workers conditions.

Physical and Cultural Heritage

The Physical and Cultural Heritage in the project areas is mainly linked to the World Heritage Site of the Mesopotamian marshlands and marshland people in the southern part of Thi Qar and Miysan governorates. The marshlands were significantly drained with the construction of a series of dams and canals, and cleared for oil exploration. 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.

Even though the tertiary irrigation infrastructure to be rehabilitated under Output 2.1.1 is not located in the vicinity of the marshlands or make any use of the marshland waters, the project ESI screening and ESMP will ensure the prevention of potential negative impacts on the marshland ecosystems from potential pollution and inefficient use of water resulting from the rehabilitation of the tertiary irrigation infrastructures and irrigation water use (Output 2.1.1). Additionally, The project (Output 2.3.1) will specifically support the people and fragile ecosystem of the Marshlands World Heritage in the target governorate of Miysan, through investments and the creation of job opportunities linked to the traditional cultural practices supporting biodiversity conservation in this unique environment: fishing, handicrafts, and water buffalos rearing. The project will facilitate access to financial resources, knowledge and

technology for environmentally sound traditional practices supporting the conservation of the natural and cultural heritage of the marshlands.

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.

Lands and Soil Conservation

Land degradation – loss of vegetation cover, soil erosion, soil fertility loss, soil and water pollution and salinization, sand mobilization – in the target areas is a consequence of mal-adaptive agriculture and livestock management practices and the over-exploitation of water resources, which are exacerbated by climate change impacts.

ESI screening and ESMP will ensure the prevention of potential negative impacts on lands and soil conservation resulting from the rehabilitation and construction of irrigation infrastructures (Output 2.1.1) and marketing infrastructures (Output 2.3.1). Project ESMP will address soil and water conservation needs and efficient water use at the sub-basin levels of the target governorates where the irrigation schemes are located. These will be part of the assessments undertaken during the inception phase along with the hydrological studies related to the water infrastructure rehabilitation. 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 investments for agriculture production planned under the grants (Output 2.3.1). Conversely, the adaptation measures for agriculture production supported by the project will significantly contribute to soil erosion prevention, soil salinity control and desalinization, soil fertility improvement, and soil & water conservation, as a result of farmers’ adoption of agronomic systems and technologies tested and validated by the National Agricultural Research System (NARS) and other partners (e.g. ICARDA, FAO) under several regional agriculture research for development (R4D) projects (some co-financed by IFAD grants inclusive of Iraq). 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. During the preparatory year of the project, the project implementation unit/team

will enhance the systematic integration and alignment of social, environmental and climate change considerations between BRAC and SARP through a) Identifying the steps and entry points to implement the ESP from BRAC and SARP in a synchronized manner; b) Describing and clarifying the roles and responsibilities at each step of ESP implementation; c) Developing tools and methods to assess and document environmental, social and climate-change risks for both BRAC and SARP; d) Promoting compliance monitoring and monitor the implementation of the environmental and social management plan and the effectiveness of stakeholder engagement, and; f) regularly monitoring and focusing on activities located in areas that are environmentally or socially sensitive, to ensure continued diligence in pursuing the project's development objectives. The BRAC methodology developed for the project ESI Screening and ESMP will be apply to SARP too, as a way to give coherence, ensure sustainability and harmonize planned activities as "one single project".

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.

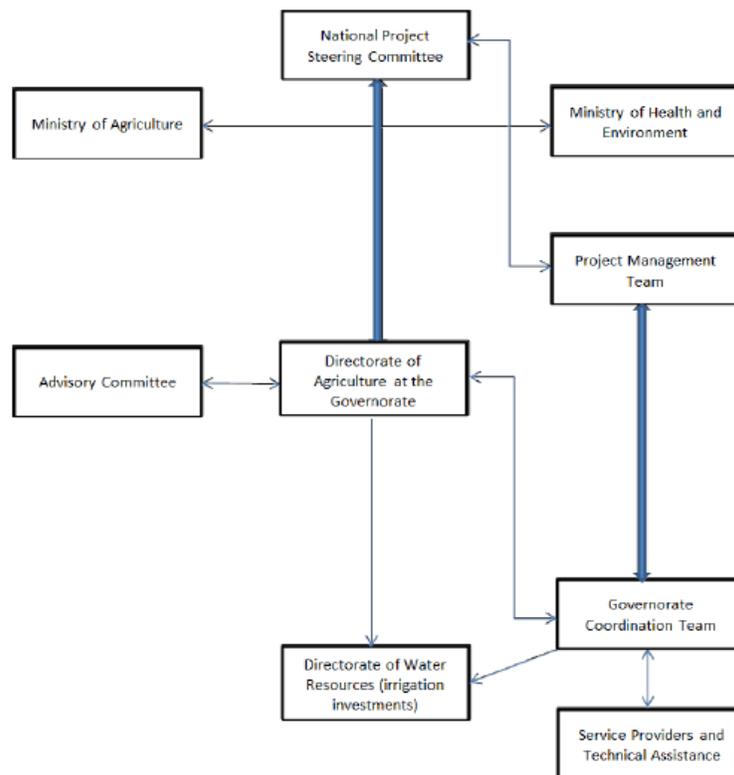
The three main entities involved in the project/IFAD baseline implementation over a six years' period would be the Ministry of Agriculture (MoA), the Ministry of Health and Environment (MoHE), and the Ministry of Water Resources (MoWR). The MoA will be the lead agency responsible for the implementation 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.
Potential impact of construction works	Medium	The ESMP will anticipate the completion of environmental and social impact assessments before work is done on each structure under the terms of legislation and in accordance with the AF Guidelines.
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 Output 2.1.1, and small-scale marketing infrastructures under Output 2.3.1 will be screened for environmental and social risks during project implementation. Other agriculture production, diversification, processing and marketing investments under 2.3.1 do not require ESI screening, as they comply with the governmental climate change adaptation priorities, with a positive environmental and social impact. Outcomes will be integrated in the ESMP.

Appendix 1, proposes a methodology for the development of ESI screening and ESMP of the project. The ESMP will include mitigation and monitoring actions and the institutional responsibilities for implementing them clearly. The ESMP (see Appendix I) includes 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 ²⁹ has been improved (with changed behaviour) as a result of project outputs	None	8,000 HH (at least 40% women).	16,000 HH (at least 40% women).	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.
	Increase in income from agriculture.	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.	Increase in income by at least 8%.	Increase in income by at least 20% for targeted households.		

²⁹ 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) n° of men/women with sustained access to efficient irrigation water; (ii) n° of men/women using agro-meteorological information to reduce climate risks to their production systems; (iii) n° 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.
<p>OP1.1.1 Climate change adaptation strategy for the agriculture sector developed.</p> <p>OP1.1.2: Skills for relevant governmental staff on climate change adaptation and risk reduction developed.</p> <p>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.</p>						
	Indicators	Baseline	Mid-term Milestone	Targets	Means of Verification	Assumptions
Outcome 1.2: Technical and institutional capacity of agriculture practitioners and producers'	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	Commitment of national institutions and actors. Project able to secure national and international

organizations in 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	reports.	technical 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	None	2,000 ha	8,322 ha		

	infrastructure.					
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	IN2.3.1: Number of grantees (disaggregated by gender) with sustained adoption of	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.

and producers' organizations.	climate resilient 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) ³⁰	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 ³¹ 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.	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.	9,999,660

³⁰ The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

³¹ 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) n° of men/women with sustained access to efficient irrigation water; (ii) n° of men/women using agro-meteorological information to reduce climate risks to their production systems; (iii) n° of men/women with sustained adoption of climate resilient technologies promoted by the project).

		<p>Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas.</p> <p>Outcome 7: Improved policies and regulations that promote and enforce resilience measures</p>	<p>6.2. Percentage of targeted population with sustained climate-resilient alternative livelihoods.</p> <p>7.1 Climate change priorities are integrated into national development strategy</p>	
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	<p>1.1.1: CC Adaptation Strategy for the Agriculture Sector.</p> <p>1.1.2: Number of governmental staff trained on climate change adaptation and risk reduction.</p>	<p>Output 2: Strengthened capacity of national and sub-national centres and networks to respond rapidly to extreme weather events</p> <p>Output 7: Improved integration of climate-resilience strategies into country development plans.</p>	<p>2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events (by gender)</p> <p>7.1.1 No. of policies introduced or adjusted to address climate change risks (by sector)</p>	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	<p>1.2.1: Number of people reporting adoption of climate-resilient systems and technologies.</p> <p>1.2.2: Number of WUAs applying sustainable management of water resources in the target areas.</p>	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

<p>2.1. Climate-proof systems and technologies for water supply from tertiary canals up to farmland plots are implemented in the target governorates</p>	<p>2.1.1: Number of households 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.</p>	<p>Output 4: Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability</p>	<p>4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by sector and scale)</p>	<p>5,000,000</p>
<p>2.2. The national Agro-meteorological Monitoring Network is upgraded informing early warning systems</p>	<p>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.</p>	<p>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</p>	<p>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</p>	<p>729,000</p>
<p>2.3. Climate resilient agriculture technologies adopted by target farmers and producers' organizations</p>	<p>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.</p>	<p>Output 6: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability</p>	<p>6.1.1.No. and type of adaptation assets (tangible and intangible) created or strengthened in support of individual or community livelihood strategies</p>	<p>2,127,000</p>

- **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 N°	Percentage	Amount (USD)	Year	Milestone
1 st instalment	30.77%	3,077,632	Jun 2018	<ol style="list-style-type: none"> 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

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

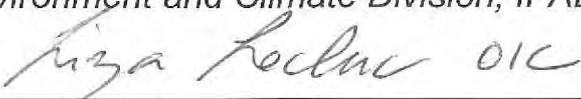
				rehabilitation and expansion 40. Follow-up of construction works of water infrastructure 41. Organization of information events with beneficiaries to raise awareness about grant funding opportunities 42. Call for tenders for the different grant packages 43. Preparation of grants' contracts Provision of institutional development/technical/marketing assistance and advise to grantees
5 th 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 government³² *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: 25 January 2018
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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, <u>commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund</u> and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.	
Margarita Astralaga, Director Environment and Climate Division, IFAD Implementing Entity Coordinator 	
Date: 12 Feb 2018	Tel. +39 06 5459 2151 email: m.astralaga@ifad.org
Project Contact Person: Rami Abu Salman	
Tel. +39 06 5459 2291 Email: r.salman@ifad.org	

³² 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.

APPENDIX 1

Methodology for the Development of ESI Screening and ESMP for the BRAC project

Contents

- I. Summary description of the project/programme
- II. Screening and categorization,
- III. Environmental and social management plan
- IV. Monitoring and evaluation arrangements

I. Summary of the project

Iraq is a Middle Eastern country including the Mesopotamian alluvial plain, a desert plateau in the west, a mountainous region located in the northern and north-eastern parts of the country, and the undulating region. It has a continental and subtropical climate. The rivers Tigris and Euphrates, whose catchment areas are shared with other five countries, form the main water surface resources. Iraq is an oil-rich upper middle-income country with a population of 36 million growing at 3% per year and of which 33% are rural. Conflict and excessive dependence on oil pose significant challenges to Iraq's socio-economic development. Civil unrest has displaced some 1.1 million Iraqis or made them refugees. Iraq has been identified as a country with extreme fragility by IFAD and most other international agencies. Fragility stems from weak institutional capacities and structures for good governance and affects rural development significantly, reducing institutional capacity and service delivery. Volatile and transboundary security with associated risks are not conducive to private sector investment for reconstruction, inclusive economic growth and job creation. In 2012, rural poverty rate stood at 31%, nearly the double of the urban poverty one. 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 many Iraqis. Natural resources such as land, water, forest and pasture have been inefficiently and unsustainably managed with underground water overly exploited beyond recharge capacity. The environmental crisis is likely to be worsened by the impact of climate change. According to recent analysis carried out by ICARDA for the period 2010-2040, the annual precipitation is set to decline significantly, while mean temperatures should increase. The indicators of climatic change included in the ICARDA working paper are strong and alarming enough to necessitate appropriate adaptation actions at all levels. The Iraqi 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.

Iraq is an agriculture country with knowledge and expertise, although given the current low crop and livestock productivity, agriculture is no longer the major source of livelihood for smallholder farmers. The total agricultural area amounts to 11 million ha of which 6 million are actually cultivated with 2,5 million ha under rain fed in the North and 3,5 million ha under irrigation in the Centre and the South. In the irrigated system, in addition to cereals, winter and summer vegetables, corn, rice and fruit trees with predominantly date palm are grown. The rain fed farming system is crop/small ruminant based. Increasing water scarcity and reduced water

availability are dominant economic and environmental challenges. Most irrigation structures are in state of disrepair as a result of poor maintenance and lack of cleaning.

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. The Government has formulated a 2013-2017 National Development Plan designed to enable the Iraqi economy to take off and start to free itself from a revenue-generating economy dependent on oil, expanding its base to depend on other activities. There are currently several emerging national programmes being carried out by the Ministry of Agriculture to pilot new practices and aiming at productivity enhancement and efficient use of natural resources and adaptation to climate change.

The Project “Building Resilience of the Agriculture Sector to Climate Change in Iraq” (BRAC) will intervene in the four governorates of Muthanna, Qadisiya, Missan and Thi Qar, where poverty rates are the highest in Iraq, and where agriculture production depends on irrigation. It is estimated that these Governorates have 72,480 farming households of which more than 90% are smallholders with less than 12.5 hectares. The project objective is to strengthen the agro-ecological and social resilience to climate change in 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 will target 16,000 households over its seven-year duration, yielding benefits for around 110,400 people given the current household size of 6.9 in rural areas. 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 BRAC project management 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. 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. 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. By doing so, BRAC will test new approaches and technologies that could be scaled-up through the financial contribution of IFAD.

The project is shaped along the following components:

Component 1: Capacity development to integrate CC adaptation and risk reduction into agriculture planning and production systems. This 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 and produce and implement CC adaptation plans that incorporate soil and water conservation, and climate-risks reduction needs. The outcomes of Component 1 will be: (i) Increased capacity of governmental staff on mainstreaming CC adaptation into the agriculture sector; and (ii)

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.

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 outcomes of Component 2 will be: (i) Irrigation water supply infrastructure in the target cultivated lands is improved based on modern climate-proof technologies; (ii) The national agro-meteorological monitoring network is upgraded informing early-warning systems; and (iii) Climate-resilient agronomic systems and technologies adopted by target farmers and producers' organizations.

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 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 through several regional agriculture research projects and demonstrated their effectiveness in enhancing resilience to climate change, agricultural productivity, as well as the sustainable use of natural resources.

BRAC 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 also responds to the 2013-2017 Development Plan agriculture development and environmental goals.

The project implementation will heavily rely on existing Government structures, and will be fully embedded in the SARP project. The project will have a Project Steering Committee which will be led by the Deputy-Ministry of Agriculture. A Project Management Team will be established in Baghdad and be responsible for overseeing implementation of the project. Financial and project risks measures will be assessed as an on-going process throughout the implementation of the project.

II. Screening and categorization

The project corresponds to Category B since the scale, nature and severity of the potential environmental and social impacts of a number of project activities require the implementation of ESI screening and ESMP. Project Section II.K Provides an overview of the environmental and social impacts and risks identified as being relevant to the project.

Screening the project investments on small scale tertiary irrigation infrastructures under Output 2.1.1 (these projects may have potential adverse impacts that are small in scale, barely widespread, reversible and easily mitigated with preventive and control measures governed by AF check list of ESP) has classified them under AF classification category B, therefore requiring the implementation of ESI screening and ESMP.

Project Output	ESP	Potential impact and risks	Examples of Mitigation
Output 2.1.1 Rehabilitation and/or construction of small scale tertiary canals up to farmland plots	ESP 1	<ul style="list-style-type: none"> Positive impact: The project complies with all national relevant laws, regulations and technical standards. In the absence of national standards, the project will apply internationally recognized standards. 	
	ESP 2	<ul style="list-style-type: none"> Positive impact: The project design supports equal access to training, equipment, infrastructure and services, taking especially into account marginalized and vulnerable groups, namely women, youth and marshland communities. Potential negative impact: The rehabilitated tertiary canals may not ensure access to and equitable distribution of irrigation water to the different vulnerable groups in the target areas, especially women. 	<ul style="list-style-type: none"> Planning and designing of rehabilitation works is done through consultation and agreements with vulnerable groups that may benefit from irrigation water. Project Component 1 supports the creation and/or institutional development of WUAs with equal access to vulnerable groups. Project Component 1 ensures adequate training and institutional development of beneficiaries and users' groups to make an effective and efficient use of irrigation water.
	ESP 3	<ul style="list-style-type: none"> Positive impact: The project specifically targets marginalize and vulnerable groups with a gender approach, who will benefit from institutional development and capacity building activities under Component 1, and from climate-resilient investments under Component 2. Potential negative impact: The rehabilitated tertiary canals may not benefit all concerned marginalized and vulnerable groups in the target areas. 	<ul style="list-style-type: none"> Planning and designing of rehabilitation works is done through consultation and agreements with vulnerable groups that may benefit from irrigation water. 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. Project Component 1 supports the creation and/or institutional development of WUAs with equal access to vulnerable groups and awareness and education on the need to conserve water and promote efficient use.

			<ul style="list-style-type: none"> Project Component 1 ensures adequate training and institutional development of beneficiaries and users' groups to make an effective and efficient use of irrigation water.
	ESP 4	<ul style="list-style-type: none"> Positive impact: The project is designed to respect and adhere to the requirements of all relevant conventions on human rights. The project implementation entity, together with other UN agencies present in Iraq, will support UNAMI to monitor the human rights situation throughout the target governorates. 	
	ESP 5	<ul style="list-style-type: none"> Positive impact: The project will 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. 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. Potential negative impact: The rehabilitated tertiary canals may not well capture and address the needs of women groups in the target areas. 	<ul style="list-style-type: none"> Planning and designing of rehabilitation works is done through consultation and agreements with vulnerable groups that may benefit from irrigation water. 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. Project Component 1 supports the creation and/or institutional development of WUAs with equal access to vulnerable groups. Project Component 1 ensures adequate training and institutional development of beneficiaries and users' groups to make an effective and efficient use of irrigation water.
	ESP 6	<ul style="list-style-type: none"> Positive impacts: Relevant national labour laws guided by the ILO labour standards will be followed throughout project implementation. 	<ul style="list-style-type: none"> Make sure all machinery and vehicles are operated efficiently and according to the manufacturers specifications, by trained and

	<p>Employment creation enabling marginalized and vulnerable groups including unemployed youth and women to raise their income.</p> <ul style="list-style-type: none"> • Potential negative impacts: (i) potential workers accidents; (ii) adverse impacts to the health and daily life of workers and residents due to the increase of noise, deterioration of air quality, aesthetic problems and traffic congestion. 	<p>qualified operators.</p> <ul style="list-style-type: none"> • Make sure all personnel are issued with protection equipment and are advise of its proper use. • Installation of adequate signs and delineation equipment in construction sites. • Timing of construction activities to avoid traffic load and interference with nearby social activities. • Ensure all machinery is in good order and repair and not leaking fuel or volatile emissions.
ESP 7	<ul style="list-style-type: none"> • Not applicable 	
ESP 8	<ul style="list-style-type: none"> • Not applicable 	
ESP 9	<ul style="list-style-type: none"> • Positive impact: The project activities are designed to support the sustainable management of water, soil, and fishing that will have a positive impact in the surrounding habitats of the targeted farmland areas and rangelands, and in the environmental quality of the fragile marshlands habitats designated as World Heritage Site. Project investments for agriculture production (Output 2.3.1) will only support equipment, tools and inputs that have demonstrated their effectiveness in terms of soil and water conservation and pollution reduction. 	
ESP 10	<ul style="list-style-type: none"> • Positive impact: Same as ESP 9 above. 	
ESP 11	<ul style="list-style-type: none"> • Positive impact: The project has a climate change adaptation approach, with all activities aiming to increase the adaptive capacity of marginal and vulnerable population groups, service providers and governmental staff, as well as the climate resilience of the targeted land 	

		<p>areas. Project investments are compliant with the governmental adaptation priorities for the agriculture sector.</p>	
	ESP 12	<ul style="list-style-type: none"> • Positive impact: (i) increase in water supply and quality to meet agriculture production and local population needs; (ii) support the implementation of efficient irrigation technologies with positive effect in agriculture production and reduction of salinity and pollution problems. • Potential negative impacts: (i) dust emissions generated from loading and unloading of materials; (ii) erosion of exposed soils; (iii) generation of debris and pollutants from the breaking of existing degraded structures and backwash water that might affect land and workers health; (iv) use of potentially harmful materials (e.g. materials containing PCB); (v) potential contamination of soil and water due to spills, leakage from fuel storage, wrong dosage of chemicals; (vi) unsustainable use of water with potential effects on marshland and river ecosystems, and fishing activities. 	<ul style="list-style-type: none"> • Water extraction monitoring. • Provision of uncontaminated water for dust suppression and wash down of vehicles and machinery. • Spill control measures to prevent spills from infiltrating into groundwater table. • Waste management measures should be implemented to prevent litter and debris and liquid wastes from entering soil excavations and neighbouring farmland areas. • Re-use any excess excavation material generated by the construction within the site or on nearby sites. • Height and slope of stockpiles should be limited to minimize erosion of unconsolidated materials. • Locating stockpiles on flat areas, away from runoff water to ensure sediment or erosion cannot reach waterways. • Solid waste that cannot be re-used shall be disposed of in approved landfills. • Limit use of harmful materials. If unavoidable impose monitoring and maintenance.
	ESP 13	<ul style="list-style-type: none"> • Positive impact: (i) increase in water supply and quality to meet local population needs. • Potential negative impacts: (i) generation of dust, debris and pollutants from the breaking of existing degraded structures and backwash water that might affect land and workers health; (ii) use of potentially harmful materials 	<ul style="list-style-type: none"> • Make sure that activities likely to cause adverse noise impacts are timed to have least impact on surrounding land users and other site activities (e.g. schools, hospitals). • Implement air and water quality mitigation measures. • Project Component 1 supports the creation and/or

		<p>(e.g. materials containing PCB); (iii) potential public safety concerns associated with the excavation works; (iv) adverse impacts to the health and daily life of workers and residents due to the increase of noise, deterioration of air quality, aesthetic problems and traffic congestion; (v) potential contamination of soil and water due to spills, leakage from fuel storage, wrong dosage of chemicals.</p>	<p>institutional development of WUAs with equal access to vulnerable groups and awareness and education on the need to conserve water and promote efficient use for agriculture production, drinking water and other uses.</p>
	ESP 14	<ul style="list-style-type: none"> • Positive impacts: The project will specifically support the people and fragile ecosystem of the Marshlands World Heritage in the target governorate of Miysan, through the creation of job opportunities linked to the traditional cultural practices supporting biodiversity conservation in this unique environment: fishing, handicrafts, and water buffalos rearing. • Negative impacts: (i) unsustainable use of water with potential effects on marshland and river ecosystems, and fishing activities; (ii) the rehabilitated tertiary canals may not benefit the marshland vulnerable people in the target areas. 	<ul style="list-style-type: none"> • Minimize marshland habitat degradation due to construction activities. • Plant trees and shrubs in vulnerable sites to prevent erosion and pollution. • Planning and designing of rehabilitation works is done through consultation and agreements with vulnerable groups that may benefit from irrigation water. • Project Component 1 supports the creation and/or institutional development of WUAs with equal access to vulnerable groups. • Project Component 1 ensures adequate training and institutional development of beneficiaries and users' groups to make an effective and efficient use of irrigation water.
	ESP 15	<ul style="list-style-type: none"> • Positive impacts: The irrigation water from the rehabilitated canals will be used to support 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 	<ul style="list-style-type: none"> • Plant trees and shrubs around canals, roads, and drainage areas to prevent erosion and pollution. • Waste management measures should be implemented to prevent litter and debris and liquid wastes from entering soil excavations and neighbouring farmland areas.

		<p>agronomic systems and technologies tested and validated.</p> <ul style="list-style-type: none"> Negative impacts: (i) erosion of exposed soils; (ii) generation of debris and pollutants from the breaking of existing degraded structures and backwash water that might affect land; (iii) potential contamination of soil and water due to spills, leakage from fuel storage, wrong dosage of chemicals. 	<ul style="list-style-type: none"> Re-use any excess excavation material generated by the construction within the site or on nearby sites. Height and slope of stockpiles should be limited to minimize erosion of unconsolidated materials. Locating stockpiles on flat areas, away from runoff water to ensure sediment or erosion cannot reach waterways.
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Screening the project investments on the upgrading of the agro-meteorological stations network under Output 2.2.1 fall under Category C as they will not have adverse environmental and social impacts.

Project Output	Type of investments	Potential impact and risks	ESI Screening & ESMP
Output 2.2.1	<ul style="list-style-type: none"> Upgrading the agro-meteorological station network 	<ul style="list-style-type: none"> Positive impact: 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. 	Not needed

Screening the project investments on climate-resilient technologies for agriculture production, processing and produce diversifications under Output 2.3.1 fall under Category C as they will not have adverse environmental and social impacts. The majority of investment grants under Output 2.3.1 will fall into this category. The project will only provide funding for adaptive agronomic systems and advanced technology packages already tested and demonstrated the effectiveness 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).

Project Output	Type of investments	Potential impact and risks	ESI Screening & ESMP
Output 2.3.1	<ul style="list-style-type: none"> Efficient irrigation technologies (e.g. drip irrigation) 	<ul style="list-style-type: none"> Positive impact: increase of production with highest water use efficiency and much lower water consumption; soil salinity reduction. 	Not needed
	<ul style="list-style-type: none"> Conservation agriculture systems and technologies 	<ul style="list-style-type: none"> Positive impact: increase soil moisture and water infiltration, reduce runoff erosion risk, increase soil organic matter and fertility, reduce risk of soil 	Not needed

	(permanent soil cover through mulching, no-till or mini-till, crop rotation and diversification)	and water pollution, reduce pests, reduce costs from fuel, machinery and agro-chemicals, increase carbon-sequestration.	
	<ul style="list-style-type: none"> • Integrated pest management and organic fertilization (namely for date palm production) 	<ul style="list-style-type: none"> • Positive impact: Reduction of pollution and pest problems with higher productivity 	Not needed
	<ul style="list-style-type: none"> • Beekeeping equipment for production and product diversification 	<ul style="list-style-type: none"> • Positive impact: increase crop pollination, enhance natural habitats, diversify income opportunities 	Not needed
	<ul style="list-style-type: none"> • Integrated crop-livestock production system 	<ul style="list-style-type: none"> • Positive impact: increase soil organic matter and fertility, reduce the use of pesticides, diversify production 	Not needed
	<ul style="list-style-type: none"> • holistic packages to improve sheep flocks' reproductive performance and reduce winter-feeding gap through forage production based on drought- and salinity-resistant species and varieties 	<ul style="list-style-type: none"> • Positive impact: increase fertility rates and productivity; increase adaptability of selected breeds and crop species/varieties; reduce pressure on natural rangelands. 	Not needed

Screening the project investments on small scale marketing infrastructures that could be funded under Output 2.3.1 (these projects may have potential adverse impacts that are small in scale, barely widespread, reversible and easily mitigated with preventive and control measures governed by AF check list of ESP) has classified them under AF classification category B, therefore requiring the implementation of ESI screening and ESMP. In case project beneficiaries apply for grant funding to build small scale marketing and livestock shelter constructions, specific impacts and risk and mitigation measures should be identified.

For component 1 (Outputs 1.1.1, 2.1, 2.2 & 2.3) which are of institutional development and technical capacity building nature, the project activities have no adverse environmental or social impacts and are thus categorized as Category C from AF ESP Guidance.

III. Environment and Social Management Plan

III.1 Safeguard and Screening Procedures

The execution entity will develop an Environmental and Social Management Plan (ESMP) for the whole project. Since water shortages are forecast to occur, solutions have to be found for an integrated sub-basin level planning of water resources. Each of the 4-5 irrigation schemes selected for rehabilitation/modernization works will constitute a sub-unit within the proposed ESMP, in order to ensure environmental and social sustainability in the farmland plots and villages supplied by the irrigation schemes at the sub-basin level. Each of the 4-5 schemes will thus undergo a thorough environment and social impact screening procedure. The assessed sub-units will then be integrated in a single ESMP to ensure coherence and harmonization among management measures avoidance, mitigation, as well as enhancements that would be implemented during the construction and operation/maintenance and monitoring phase of the project.

The project will have three layers of environmental and social safeguards where project interventions will be implemented:

- Adoption of General Environment and social Policy by the project as follows:

Policy Issue	Project Guideline
Compliance with the Law	The project interventions will comply with relevant national environmental laws, policies and regulations.
Access and Equity	The project will ensure equal access to training, equipment, infrastructure and services. Gender equity, integration of youth and environmental sustainability were pursued as key cross-cutting themes in the project design.
Marginalize and vulnerable groups	The Project will not fund in the target areas any intervention that could have a negative impact on marginalize and vulnerable groups.
Gender equity and women's empowerment	The project recognizes the different impact that project investments might have according to gender, and will only finance gender-responsive measures to address the needs and constraints of women and men, such as quotas for investment grants to enhance women's opportunities in formal sector employment; investments in skill training, market information, and improved market access.
Core labour rights	The project interventions directly or indirectly supporting job opportunities will ensure relevant national labour laws guided by the ILO labour standards.
Protection of natural habitats, with special focus to marshlands.	The Project will not fund in the target areas any intervention that encroach in to any declared or proposed protected area of natural habitats (e.g. UNESCO WH sites of marshlands) or that result in the conversion of natural habitat to other purposes.
Conservation of biological diversity	The project will not fund in the target areas any intervention that negatively affects wild species populations and conservation status.
Climate change	The project will not fund in the target areas water use and agriculture production measures and technologies that are not compliant with the adaptation priorities proposed by the INC and other governmental documents. The project will provide financial support to project beneficiaries only for investments already tested and effectively demonstrated by the National Agricultural Research System (NARS) and other partners (e.g. ICARDA, FAO) through several regional agriculture research for development (R4D) projects
Pollution prevention	The project will not fund in the target areas any intervention that

and resource efficiency	overexploits, damages and/or degrades key resources such as freshwater, soil, vegetation cover, and agro-biodiversity such as local breeds and crop species and varieties.
Physical and cultural heritage	The project will not fund in the target areas any intervention that displaces, damages, makes it inoperative and/or inaccessible any physical and human resource that is of historical or cultural significance.
Lands and soil conservation	The project will not fund in the target areas measures and technologies that increase the risk of land degradation. The project will provide financial support to project beneficiaries only for investments already tested and effectively demonstrated by the National Agricultural Research System (NARS) and other partners (e.g. ICARDA, FAO) through several regional agriculture research for development (R4D) projects
Involuntary resettlement	The project will not fund in the target areas any intervention that leads to or give rise to possibility of involuntary resettlement.

(b) Conformation of the ESMP to the technical guidelines and specifications. These guidelines will be adopted from: (i) the technical and legal framework of the Law of Environmental Protection and Improvement that includes provisions for the protection of human, environment and biodiversity from water, air and soil pollution; (ii) the water management and use provisions of the Iraqi Water Law; (iii) the national programs (NP) of 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 (NP for the use of on-farm modern irrigation systems; NP for the development of drought and salinity tolerant crops; NP for the rangeland improvement and combatting desertification program; NP for organic agriculture; NP for the establishment of an agricultural meteorology network; NP for conservation agriculture).

ESMP guidelines will build on the wider range of climate change adaptation approaches and advanced technology packages developed, tested and effectively demonstrated by the National Agricultural Research System (NARS) and other partners (e.g. ICARDA, FAO) through several regional agriculture research for development (R4D) projects. ESMP guidelines will build on regulations and standards included in the Laws of the environment protection N° 3, New Environmental Framework Law N° 27, Regulations of MoHE on sanitary waste, regulations, legislations and instructions of MoHE and MoCHPM for construction and demolition waste, Instructions issued by the MoHE on contamination limits and protection of rivers, Regulations N° 2 of 2001 on preserving water resources, and the Iraqi Federal Civil Code N° applicable to construction and/or designed-related contracts both for public and private, among others.

(c) ESI Screening and ESMP preparation. The ESI Screening and ESMP will be prepared and presented in the format given in Format 1 and 2 included at the end of this Appendix. Each of the ESI Screening and ESMP will undergo a two-layered screening process: (i) an internal process to ensure that the documents are prepared in conformity to the guidelines. This screening process will score the projects interventions requiring ESI screening (especially the rehabilitation and construction of small scale tertiary irrigation infrastructures under Output 2.1.1, and potential agriculture production and marketing small scale infrastructures under Output 2.3.1) on each of the environment and social parameters and based on the recommendations of the Technical Advisory Group the interventions that fail the score will not be funded. (ii) A second screening will be undertaken by the Steering Committee or Governorate-level sub-committee nominated for the purpose.

III.2 Consultations and Public Disclosure

Consultations of key stakeholders will be undertaken as part of the finalization of the Environment and Social Impact (ESI) Screening and Environment and Social Management Plan (ESMP) under the proposed project at the sub-basin/governorate level (land areas and rural communities affected by the irrigation schemes) and project level.

The aim of consultations will be to: (i) disseminate information about the sub-project (irrigation scheme rehabilitation/modernization, land area benefiting from irrigation water supply, arrangements for an equitable water distribution system and payment, criteria and conditionality for an efficient water use and sustainable agronomic practices, etc.); (ii) verify the identification of potential impacts (ESI) and their proposed mitigation plan (ESMP); (iii) verify the significance of the impacts and the mitigation measures; and (iv) allow the stakeholders to express their concerns and opinion about the project activities. The consultations will be conducted at three levels: one, at the village level; second, at the governorate level; and the third at the state level.

Village Level Consultation: A formal presentation of the ESI Screening and ESMP will be made at the village councils. The presence of the persons whose land is in the supplied area of the irrigation scheme and the group of land users will be ensured in these meetings. The presentation of the ESI Screening and ESMP will be undertaken in the most appropriate way to the literacy level of the members present in the meetings.

Governorate Consultation: ESI Screening and ESMPs prepared by the project will be circulated to all the members of the Governorate Management Teams (GMT) and Advisory Committees (AC). The AC members will be facilitated to undertake field and sample verification of the sub-projects prepared under the project. GMT can also outsource sample verification to service providers that will report directly to them.

State Consultation: A consolidated statement on the ESI Screening and ESMP will be placed in the project steering committee to approve sub-projects and provide guidance on key aspects.

Public Disclosure: A copy of the ESI Screening and ESMP will be submitted to the village councils where it can be accessed by any member of the village for future references. The sub-projects will form part of the documentation that will be in public domain and will be available at the governorate management team offices for inspection with prior information.

III.3. Grievance Mechanism

As mentioned in the AF “Ad Hoc Complaint Handling Mechanism (ACHM)” section³³, complainants and implementing entities should use the implementing entity’s grievance mechanism as a first step. However, the Ad hoc Complaint Handling Mechanism (ACHM) of the Adaptation Fund can be directly used in cases where the Parties have failed to reach a mutually satisfactory solution through the implementing entities’ grievance mechanism within a year. The Adaptation Fund Board Secretariat independently manages all aspects related to the ACHM, under the oversight of the “Ethics and Finance Committee (EFC) of the Board.

Implementing Entity Grievance Mechanism

³³ <https://www.adaptation-fund.org/projects-programmes/accountability-complaints/ad-hoc-complaint-handling-mechanism-achm/>

The grievance mechanism will be 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). In the case of this project, complaints will address lack of compliance to both SECAP and AF Environmental and Social Policy. 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.

The 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 be:

- The complainants claim that IFAD has failed to apply its social and environmental policies and/or the mandatory provisions set out in SECAP and AF Environmental and Social Policy.
- 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 organization 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.

In case the complainants and the implementing entity have used the entity's grievance mechanism and failed to reach a solution within a year, the ACHM process may started (see <https://www.adaptation-fund.org/projects-programmes/accountability-complaints/ad-hoc-complaint-handling-mechanism-achm/>).

III.4. Monitoring and Reporting

ESMP will involve Internal and External Monitoring process:

(a) **Internal Monitoring Process:** The internal monitoring will be undertaken by the Governorate Management Team (Monitoring and Evaluation Officer) with the support of the Advisory Committee. Each of the environment and social parameters will be monitored along with the implementation of their mitigation measures. The Governorate Management Team will submit a Compliance and Impact Monitoring Report to the IE every six months and the consolidated report will also be annexed in the Annual Report.

(b) **External Monitoring Process:** Conduct of Environment Audit and Social Audit will be carried out in sample villages within each governorate every year to verify the implementation of ESMP and to report on the conduct of ESMP and its impact in the village. The Audit Reports will be shared with the IE and a consolidated statement of these audits will be annexed to the Annual Report of the project.

III.5. Implementation Schedule

The implementation schedule of ESMP will be as follows:

Activities	Time						
	Y1	Y2	Y3	Y4	Y5	Y6	Y7
Development of technical guidelines for the project	Q ³⁴ 1						
Capacity building of project team	Q1&2						
ESI screening of sub-projects	Q3&4	Q1&2					
ESMP of sub-projects (areas covered by each of the 4-5 target irrigation schemes)		Q1-4					
Implementation of ESMP		Q1-4	Q1&2				

³⁴ Q: Quarter

Monitoring and reporting of ESMP		Q2&4	Q2&4	Q2&4	Q2&4	Q2&4	Q2&4
Environmental and Social audit			Q4	Q4	Q4	Q4	Q4

III.6. Cost for ESI Screening and ESMP

The preparation and implementation of ESMP will have costs that have been built in to the project budget. The cost implications and their source of funds will be as follows:

ESMP related activity	Source of funding to cover costs
Capacity building of project team	It will be embedded in the Project execution cost
Preparation of ESI screening and ESMP	Built in the Project execution cost
Screening of ESI and ESMP	Built in the Project activities cost (Component 2)
Mitigation measures	Built in the Project activities cost (Component 2)
Monitoring and reporting	Built in the Project execution cost
Conduct of Environmental and Social audit	Built in the Project management cost and project Component 2 cost

IV. Institutional arrangements and Capacity Building

The institutional arrangement includes the distribution of roles and responsibilities in the preparation of ESI Screening and in the implementation of ESMP. The key players and their responsibilities will be as follows:

Organization/Designation	Responsibility
Senior Technical Member of the GMT	<ul style="list-style-type: none"> • Preparation of ESI Screening and ESMP through the process of community consultation and through field visits to the target irrigation scheme and the land area supplied by the it. • Coordinate with experts in geo-hydrology, civil engineering, agriculture engineering, fisheries and livestock production, climate change adaptation, natural resources management, for the Screening of impacts on soil and water, biodiversity and natural resources. • Presentation of ESI Screening and ESMPs in the GMT and Advisory Committee. • Oversee implementation of ESMP that will be undertaken by field staff members and service providers.
Field staff members and service providers at the governorate level	<ul style="list-style-type: none"> • Assist the Senior Technical Member in the preparation of the ESI Screening and ESMP at the irrigation scheme/supplied land area level. • Presentation of ESI Screening and ESMP in the meetings of the village councils. • Implementation of the ESMP at the village level.
National Project Coordinator at the State level	<ul style="list-style-type: none"> • Monitor the progress and quality of ESI Screening and ESMP. • Ensure that the protocol for the presentation and

	<p>placement of a copy of the ESI Screening and ESMPs are placed in the governorate project offices and village councils.</p> <ul style="list-style-type: none"> • Facilitate the governorate project teams in the preparation of the ESI Screening and ESMPs by making available the services of experts as and when required by the teams. • Present the consolidated ESI Screening and ESMPs to the Project Steering Committee.
Governorate Management Team	<ul style="list-style-type: none"> • Review the ESI Screening and ESMP by entrusting the review to an advisory committee that reports back to the GMT. • Comments, expresses concern and give opinions on specific ESI Screening and the ESMPs.
Governorate Advisory Committee	<ul style="list-style-type: none"> • Review ESI Screening and ESMPs. It can also undertake sample checks and give expert opinion on the quality of ESI Screening and the mitigation measures identified in ESMPs.
Implementation Entity	<ul style="list-style-type: none"> • Monitor and review the process of ESI Screening and ESMP. • Review the prepared ESI Screening to ensure it fulfills acceptable standards and quality.

The job descriptions and performance management systems of the respective project staff will include their responsibilities related to preparation of ESI Screening and implementation of ESMPs. Similarly, the Terms of References that will be developed for the Governorate Management Teams and the Advisory Committees will include their role and responsibility in ensuring that the project develops ESI Screening that includes environmental and social safeguards, and implements ESMP to enhance the environmental and social impacts at the sub-project level.

Capacity Development

The project will have in-house capacity in Finance Management, Procurement, Climate Change Adaptation, Gender, Training and Community Organizer and Monitoring & Evaluation. Service providers will be hired to deal with specific civil engineering, soil and water management, adaptive agronomic practices and systems, livestock production, gender-related assessments, participation, specific social services to marginalized and vulnerable groups (people of the marshlands, women and youth), and capacity development. The capacity development of the GMT staff on issues of “public health”, “workers safety and labour Rights”, will be built through training sessions to enable them to undertake ESI Screening and ESMP in the sub-project villages.

Format 1: Format of ESI Screening

1. Project Description

- 1.1 Description of the proposed operation
- 1.2 Maps and diagrams of the project site
- 1.3 Area that will be affected and impacted
- 1.4 Settlements that will be affected
- 1.5 Population that will be affected (attach list of households)

2. Baseline Condition

- 2.1 Description of existing environmental and social condition
- 2.2 Attach PRA maps and other data that has been collected

3. Environment Impacts and Risks

The Screening will be in terms of (a) Direct Environmental Risks; (b) Direct Environmental Impacts; (c) Indirect Environmental Risks; and (d) Indirect Environmental Risks on the following issues.

- Compliance with the Law
- Protection of Natural Habitats
- Conservation of Biological Diversity
- Climate Change
- Pollution Prevention and Resource Efficiency
- Public Health
- Physical and Cultural Heritage
- Land and Soil Conservation

4. Social Impacts and Risks

The screening will be in terms of (a) Direct Social Risks; (b) Direct Social Impacts; (c) Indirect Social Risks; and (d) Indirect Social Risks on the following issues.

- Compliance with the Law
- Access and Equity
- Marginalized and Vulnerable Groups
- Human Rights
- Gender Equity and Women's Empowerment
- Core Labour Rights
- Indigenous Peoples
- Involuntary Resettlement
- Public Health
- Physical and Cultural Heritage

4. Analysis of Alternatives

Description of alternatives that were identified and their Screening in terms of:

- (a) Direct and Indirect Environment and Social Impact
- (b) Opportunities for enhancing environmental and social benefits

5. Recommendations

Risk Management options in terms of:

- (i) Preventing Risk

- (ii) Avoiding Risk
- (iii) Mitigating Risk
- (iv) Transferring Risk
- (v) Absorbing Risk

6. Process Note for the preparation of ESI Screening

- 6.1 Consultations held with different stakeholders in the community
- 6.2 Consultations held with women and youth
- 6.3 Consultations held with village councils

Format 2: Format of ESMP

1. Management Plan

Environment and Social Risk identified in ESI Screening	Mitigation Measure	Implementation Schedule for the mitigation measure	Responsibility for execution of the mitigation measure
Compliance with the Law			
Access and Equity			
Marginalized and Vulnerable Groups			
Human Rights			
Gender Equity and Women's Empowerment			
Core Labour Rights			
Indigenous People			
Involuntary Resettlement			
Protection of Natural habitats			
Conservation of Biological Diversity			
Climate Change			
Pollution Prevention and Resource Efficiency			
Public Health			
Physical and Cultural Heritage			
Lands and Soil Conservation			

2. Consultation and Public Disclosure

The plan for consultation and public disclosure of the ESMP will be recorded here. The plan will be for:

- (a) Consultations for preparation and implementation of ESMP
- (b) Consultation with women of the village community
- (c) Notification to village community when will the activities be implemented
- (d) Disclosure of Monitoring and Sub-Project Completion report

3. Monitoring Plan

The monitoring plan will comprise of the parameters for monitoring and the frequency with which the monitoring will be carried out. The recording and reporting procedures will also form part of the monitoring plan.

Mitigation measure	Monitor parameter	Responsibility for monitoring	Recording and reporting frequency
Compliance with the Law			
Access and Equity			
Marginalized and Vulnerable Groups			
Human Rights			
Gender Equity and Women's Empowerment			
Core Labour Rights			
Indigenous People			
Involuntary Resettlement			
Protection of Natural habitats			
Conservation of Biological Diversity			
Climate Change			
Pollution Prevention and Resource Efficiency			
Public Health			
Physical and Cultural Heritage			
Lands and Soil Conservation			

4. External Audit and Verification

4.1 Conduct of Environment Audit

4.2 Conduct of Social Audit

4.3 External Verification processes

5. ESMP Completion Report

APPENDIX 2

PARTICIPANTS OF IN-COUNTRY CONSULTATIONS

Several meetings with Government officials, partner organizations, civil society, farmer organizations and potential beneficiaries were undertaken at the 4 different target governorates.

GOVERNMENT CONSULTATIONS

Ms Ilham Jawad Mahdi	MoA
Ms. Buthainah Hadi Hasan	Ministry of Finance
Dr Jasim Falahi	Ministry of Health and Environment
Ms. Neam Nabeel Hashim	Ministry of Health and Environment
Ms. Halah Fouad Saleh	Ministry of Health and Environment
Ms. May Juboori Daood	Ministry of Health and Environment
Ms. Buthainah Hussein Rustum	Ministry of Health and Environment
Mr Yousif Muayad	Ministry of Health and Environment
Mr Hadi Hamdi Mahdi	Ministry of Health and Environment
Ms Sahar Hussein Jasim	Ministry of Health and Environment
Mr Alaa Adel JAsim	MoA
Mr. Baseel Talib Ali	MoA Directorate - Thi Qar
Mr. Ali Hussein Mahdi	MoA
Mr. Hussein Abdulhassan Abd Ali	MoA Directorate - MISSAN
Mr Hayder Abdulrazaq Murthadha	MoA
Ms. Raewa Mizel Mahmood	FORESTRY DEPARTMENT
Mr Raed Hikmat jasim	MoA
Mr Salam Abbas Hussein	MoA
Mr. Shawkat Saib Jameel	MoA
Mr. Sabah Dira Abid	MoA
Mr Safaa Mohammed Ali Kadhim	MoA Directorate - QADISIYYA
Mr Amer Jabbar Oudah	MoA Directorate - MUTHANA
Mr Adnan Haneen Owayez	MINISTRY OF WATER AND IRRIGATION
Mr Ali Jabber Abdul Hassan	MoA
Mr Ali Abdulhussein Ahmed	MINISTRY OF WATER AND IRRIGATION
Mr. Ali Kareem Shauet	MoA Directorate - QADISIYYA
Mr. Firas Muzahem Hussein	MoA
Mr. Faraj Nahi Thimar	MoA Directorate - Thi Qar
Mr. Kareem Abdulzahra Mankhi	MoA Directorate - MISSAN
Mr. Layth Mohammed Hussin	MoA

Mr. Mohammed Jawad Kadhim Al Munem	Ministry of Planning
Mr. Mohammed Abdulsada Jaaz	MoA Directorate - MUTHANA
Mr Mohammed Ghazi Abdulkareem	MoA
Ms. Milad Zeyad Abdulmawla	Ministry of Finance
Ms. Nagham Adnan Shihab	MoA
Faraj Nahy Themar	Thi Qar Agriculture Director assistant
Ali Deowiy Lazem	Governor of Missan
Ali Sabeeh Jassim	Technical Governor Assistant
Ali Ariyan Saleh	Director of Statistic Office
Zaineb Twofeaq	Governor Adviser for International Org.
Seenaa Faraj Othman	Head of Woman Division
Safa Ahmed Woheed	Woman Division staff
Hussein Abdulhassan	Agriculture Director
Talib Chassib Lefteha	Head of Animals Division
Bassim Faisal	Veterinary services director
Alawoay Rashed Alawoay	Head of Extension Farming
Semear Abood	Director of Missan Environment Office
Kedher Abbas Selman	Head of Marshes Unit / Missan Environment office
Saddam Helal Hussein	Farmers' Cooperative Association Member
Karim Hattab Fenjan	Head of Farmers' Cooperative Association at Missan
Karim Abdalzahra Meki	Head of Crop Production Division
Assi Khalid Hatem	Assistan Head of Plant Protection Division
Ali Kadhum Ali	Director of Extension Center
Mohamed Shems Hashim	Head of Finance Division
Ibrahim Aziz Ali	Head of Extension Division
CONSULTATIONS WITH GROUPS, CIVIL SOCIETY AND ACADEMIA	
Eklas Hashim Mohamed	Bent Al-Hour Organization
Hana Farhan Hussein	Bent Al-Hour Organization
Haider Al-Sealawoay	Amar International Organization
Beder Meheasen Hatem	Farmers' Cooperative Association Member
Ismail Ibrahim	College of Agriculture / Missan University
Bassim Muhssin Alhassona	Chief of Thi Qar poultry Association
Talal Anwar Abdul Karim	Baghdad University
Mohsin Abdulhay Disher	Basra University
Khalid Fartosi	Thi Qar University
Fadhil Hussein Ridha	University of Kufa
Majid Khudhair Abbas	Baghdad University
Talal Anwer Abdulkareem	Baghdad University
Majeed Kadhim Abbas	University of Qadissiyah
Abdulkareem Hasan Odhafa	University of Wasit

CONSULTATIONS WITH YOUTH REPRESENTATIVES

Muhamed Yousef Jaafari
Nasim Ibrahim al Safadi
Sadeq Mohamed Ismail
Muhamed Karim Fadhil
Ali Said Hassan
Ismail Mahdi Ibrahim
Ahmed Nasr
Ali Musa Hafiz
Dawood al Suleihi
Mustafa Tayib Ahmed
Hasan Ibrahim Abbas
Ali Mahdi
Adnan Hussein
Jassem Ali
Jaafar Abdul

** Other 7 representatives but names not captured

CONSULTATIONS WITH WOMEN IN THE 4 TARGET GOVERNORATES

**The women were selected mainly from vulnerable households and women-headed households. The women were gathered and the session moderated by female members of the design team to ensure better participation.

QADISIYAH

1. Um Muhsen al Azhari
2. Fatima al Zaynabi
3. Sma'a Ihsan
4. Um Ali Muhamed
5. Istiqbal al Malaki
6. Sumeya Mahmudi
7. Razan al Athwari
8. Um Qais Mustafa
9. Ikhlas Hassan

** Other 3 representatives but names not captured

MUTHANNA

1. Um Rashed Mohamed
2. Salma al Joan
3. Dleen Ibrahim
4. Zaina Ahmed
5. Sabil Kayoosh
6. Sham Akram

7. Um Firas Yasin
 8. Slama Fadhil
 9. Sara Kasim
 10. Zaynab Ali
 11. Fatima Mohamed
 12. Amira Hassan
- ** Other 5 representatives but names not captured

MISSAN

1. Hafiza Sulaiman
 2. Um Mohamed Khabab
 3. Samya Hamud
 4. Fatima al Abudi
 5. Irtizan abi Naser
 6. Um Mohamed Ismail
 7. Um Mustafa Hamud
 8. Salima Mohamed al Ahmadi
 9. Um Kazim Amina
 10. Sahar Ihsan
 11. Um Hadi
- ** Other 4 representatives but names not captured

THI QAR

1. Sa'aida Ismail
 2. Umniya Ali Farhat
 3. Zainab Mohamed
 4. Um Akram Mohamed
 5. Um Samer al Nasiri
 6. Um Ibrahim Sulaiman
 7. Rafiqa al Shumari
 8. Um Ali al Abudi
 9. Fatima Sulaimani
 10. Ihsan Abdalla
 11. Fairuz al Athwari
 12. Iman Muhamed Ali
 13. Um Jaafar
- ** Other 3 representatives but names not captured

In addition to the women met during the consultation workshops, the design mission also visited 5-6 households within each Governorate and met with men and women apart to discuss main challenges and needs. The names during these visits were not captured. However, these visits verified the project approach regarding enhancing adaptive capacities of poor households in the project areas.

Two consultation workshops were undertaken in each of the four Governorates. One workshop in each Governorate was dedicated to women (appendix II provides a full list of consulted people). In addition, the project design mission visited 5-6 households within each Governorate, to verify the project's approach, regarding enhancing adaptive capacities. The main priorities for the communities and households consulted with included the provision of water supply to enable them to resume production activities, post-harvest facilities and training, training on processing, and provision of income generating activities in form of a grant as their level of poverty would not allow them to access loans. They also mentioned the need for the provision of efficient irrigation techniques and agricultural production in green houses/tunnels as they are facing the dire consequences of climate change which is affecting them in terms of water availability and increased pest invasion. In the visited governorates, poor men and women's constraints include lack of capital, inadequate levels of skills, poor access to finance as well as lack of marketing expertise and linkages and for women specifically, limited population.

The result of the consultations and discussions with women and also poor households in the four governorate, it was observed that women face particular obstacles and disincentives to economic participation. Despite certain efforts directed toward enhancing women's role in the society and in the economy, there has been little actual progress in women's economic participation in the targeted governorates in general in the rural areas there in particular. Employer preferences based on gender stereotypes and the heavy burden of social constraints on what kind of work is acceptable for women, have repercussions in the hiring process. The highest gender gap is evident in the agricultural sector where the percentage of agricultural holdings headed by women amounted to less than 2% in the visited areas. It was also observed that opportunities for both poor women and men in rural areas are limited but particularly so for women who face cultural restrictions also. Women stressed their need for income generating activities, such as processing of dairy products, tailoring, agro-food processing, small shops, embroidery, livestock rearing, vegetable and fruit farming, as well as tunnels for home-garden production where they would be able to improve the nutrition of their families and earn income through selling excess production. Many of the women do not own land and having income-generating activities that could be home-based were stressed. They also mentioned the need for training, including financial literacy.

Also, in the visited areas, the challenges youth face are exacerbated as employment opportunities tend to be even more limited in rural areas. The new generation is moving away from agriculture and there is a strong preference among young men and women for employment in the public sector. Young women in rural areas face even higher rates of unemployment and more limited opportunities due to cultural restrictions especially on mobility. Young Iraqi men do engage in agriculture to some extent, they are also involved in mobile repair shops, car mechanics, shopkeepers etc. Young Iraqi women may be involved in selling fruits and vegetables or home-based businesses. The constraints youth face, to varying degrees depending on their nationality and gender, include lack of capital, limited availability of jobs, mismatch between skills and jobs

available and lack of experience in running a business. These young men and women, as well as vulnerable households will be supported with customized grants within the framework of BRAC.

APPENDIX 3

CLIMATE CHANGE ANALYSIS

The below slides present the analysis summary of the climate change assessment that was undertaken during the design process. The detailed analysis, including all KMZ files are available at IFAD and can be shared. However, the size of the files is huge and the below summary only presents an overview of the results.

In addition to that, IFAD analysed the following (all remote sensing data available for consultation and will form a baseline for project implementation):

A) NDVI analysis on MODIS (250 mt resolution) 2000-2016

- Areas with decrease in vegetation cover obtained by the comparison of the 3 years before the war (2000-2002) with the last 3 years available (2014-2016).
- Areas with negative trends in vegetation development obtained by the trend analysis (significant trends only) for the time-series 2000-2016.
- Image of the areas with negative trends obtained by the trend analysis (significant trends only) for the time-series 2000-2016.

B) NDVI analysis on Landsat (30 mt resolution) 1998-2016

- Areas with decreasing in vegetation development obtained by the comparison of the 5 years before the war (1998-2002) with the last 5 years available (2012-2016).
- Areas with negative trends in vegetation development obtained by the trend analysis (significant trends only) for the time-series 1998-2016.
- Image of the areas with negative trends obtained by the trend analysis (significant trends only) for the time-series 1998-2016.

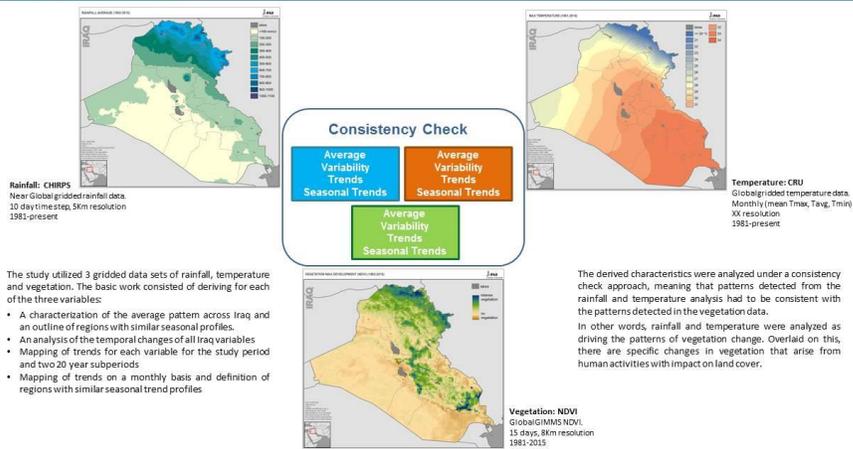
C) Areas with convergence of the two sensors above

- Areas with decreasing in vegetation development (pre-after_war comparison) obtained by intersecting the MODIS and Landsat polygons above.
- Areas with decreasing in vegetation development (trend analysis) obtained by intersecting the MODIS and Landsat polygons above.

Iraq: A Climate Analysis

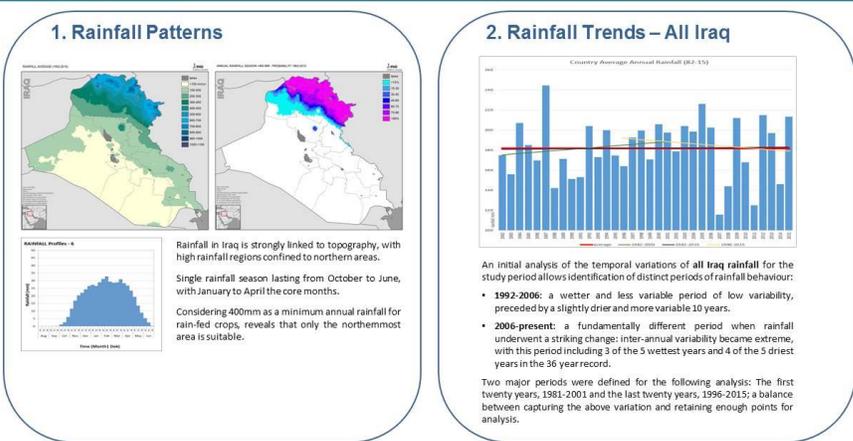


Main Conclusions



Iraq Climate Analysis

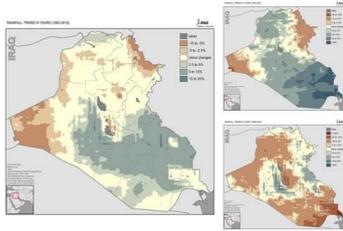
Main Conclusions



Iraq Climate Analysis

Main Conclusions

3. Rainfall Trends – Geography

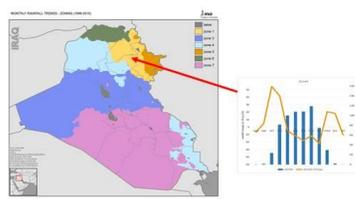


Annual rainfall trends show significant variations across Iraq.

Full study period, 1981-2015: overall, the south and central east of Iraq (essentially the irrigated agriculture regions) show a tendency for increasing annual rainfall, in contrast with a tendency for drier than average conditions in the westernmost areas bordering Syria. Northern areas show no defined tendency.

In accordance with the broad rainfall tendencies in the plot shown in 2, the two subperiods 1981-2001 and 1996-2015 show contrasting patterns. The first dominated by positive relative trends in most of Iraq, the other showing a reversal of these tendencies.

4. Rainfall Trends – Seasonality



The trends were further broken down into monthly trends and clustered into homogeneous regions.

The trends for the last 20 years show a particular distribution along the year: positive proportional trends are stronger both at the beginning and end of the rainfall season (last and second quarter of the year respectively).

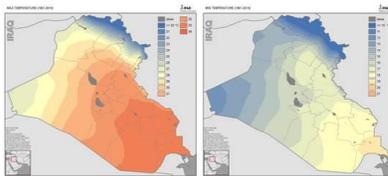
The implication is that the rainfall season is starting sooner and ending later across much of Iraq, increasing soil moisture reserves during autumn and early winter.

However, there are drying trends in the core months of the rainfall season (Jan-Apr). These trends in absolute terms are larger than those earlier in the season and overall may lead to decrease on annual rainfall or maintain it at constant levels.

As a result of increased rainfall at the start and end coupled to a decrease in the core months will make the seasonal rainfall curve look flatter

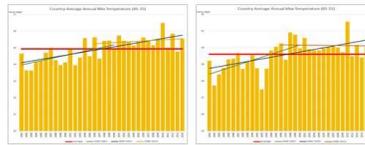
Main Conclusions

5. Temperature Patterns



Average annual temperatures (mean, max and min) in Iraq reach a maximum in the southeasternmost areas of the country and show a marked general decreasing tendency towards the westernmost and northernmost regions.

6. Temperature Trends – All Iraq



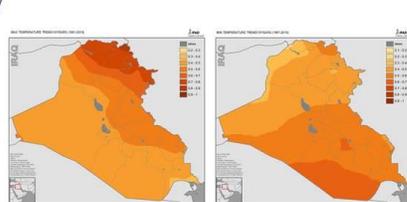
An initial analysis of the temporal variations of all Iraq temperature for the study period allows identification of distinct periods of temperature behaviour:

- **1981-1999:** a period with a clear rising temperature trend, more pronounced in the maximum temperature.
- **1999-present:** a period when temperatures became more stable, with Tmin retaining a moderately increasing trend and Tmax showing no trend.

This allows retaining the same two major sub-periods for the temperature analysis: The first twenty years, 1981-2001 and the last twenty years, 1996-2015; a balance between capturing the above variation and retaining enough points for analysis.

Main Conclusions

7. Temperature Trends – Geography

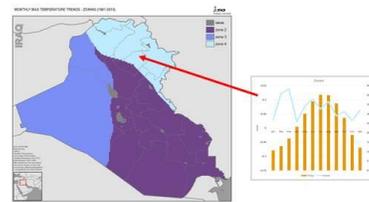


All temperatures show significant increasing trends over the past 36 years, though with particular features:

- Northern areas display the strongest warming trends in maximum temperature but the weakest warming trend in minimum temperature.
- The reverse is true for the south of the country.

Temperature amplitudes therefore should be widening in the north and narrowing in the south of the country.

8. Temperature Trends – Seasonality



Temperature trends were further broken down into monthly trends and clustered into homogeneous regions.

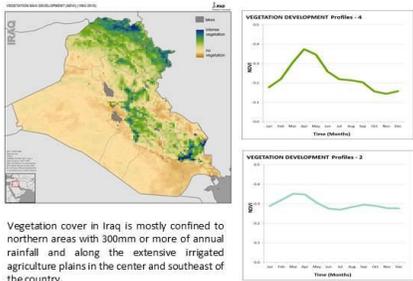
The temperature trends for the last 20 years show a particular distribution along the year: while they are positive throughout the year, they are most intense in the first three months of the year (winter) and least intense in the last quarter of the year (autumn). This is general for Tmax and Tmin, but more marked for Tmax.

The impacts of this warming trend across the full daily and seasonal temperature cycle are several:

- earlier starts in vegetation and winter crop development in northern areas;
- increased water demand on crops (particularly summer crops) through increases in potential evapotranspiration;
- problems in development of summer crops due to higher temperature extremes;
- poor pasture and water resource conditions.

Main Conclusions

9. Vegetation Patterns

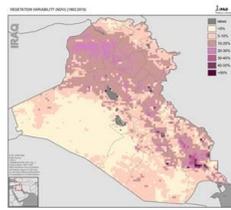


Vegetation cover in Iraq is mostly confined to northern areas with 300mm or more of annual rainfall and along the extensive irrigated agriculture plains in the center and southeast of the country.

Irrigated cropland shows an early vegetation peak in March and a second less intense in September (second season crops).

Natural vegetation or rain-fed crops show a single seasonal peak in April-May.

10. Vegetation Variability



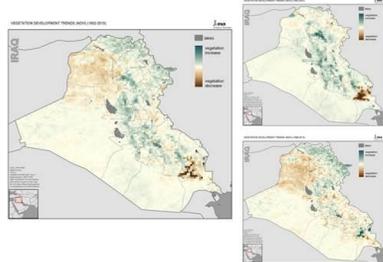
Vegetation inter-annual variability is a good indicator of unstable conditions for rainfed agriculture.

The region with highest inter-annual variability in Iraq is the region of intermediate annual rainfall of about 300-400mm between the Euphrates and the Syrian border, where vegetation development is very tightly linked to fluctuations in rainfall.

Another variability hot-spot between Nasiriyah and Basrah is related to the drastic changes in wetland extent not related to changes in rainfall or river flow regimes.

Main Conclusions

11. Vegetation Trends – Geography

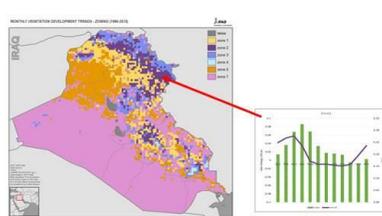


Iraq vegetation cover shows extensive positive trends in the irrigated agricultural plains and in the northeastern regions of Iraq.

Northwestern areas near the border with Syria between the two major rivers, show decreasing vegetation cover. The decrease in wetland vegetation in the Shatt-al-Arab region is also very evident.

The decreasing vegetation cover areas in the northwest is evident only in the past 20 years and are a direct response to the decreasing annual rainfall amounts in this same area.

12. Vegetation Trends – Seasonality



Vegetation trends were further broken down into monthly trends and clustered into homogeneous regions.

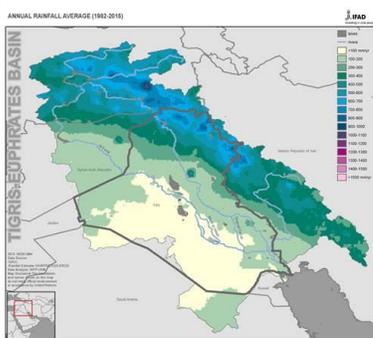
In northwestern areas, decreasing vegetation trends affect the core growing season. This is exactly as expected from the reduction in rainfall affecting these regions.

In areas of increasing vegetation, the changes are concentrated in the growing phase of the seasonal vegetation development. This means earlier green-ups with the start of the vegetation season being brought forward to Nov-Dec.

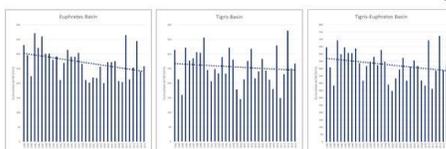
This agrees with the tendencies for increasing rainfall in autumn leading to increased soil moisture, coupled with warmer temperatures in winter, leading to earlier and more vigorous vegetation development.

Main Conclusions

13. Euphrates and Tigris Basin



The majority of the basin rainfall originates outside Iraq. Not considering Iran (mostly flows to the southern end of the basin), the Turkey part of the basin contributes 50% of the basin rainfall that serves the irrigation needs of Iraq among many other competing uses.

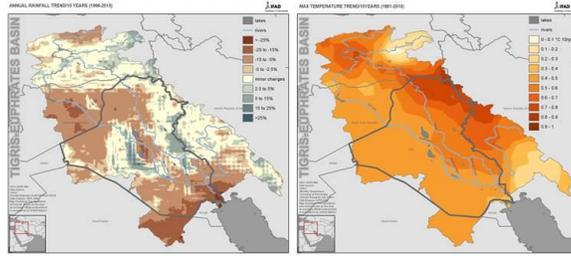


The Euphrates basin shows a decreasing rainfall trend as it entered a drier phase from 1999 onwards, after a much wetter phase until 1998. The Tigris shows a much higher inter-annual variability and a small drying tendency that is likely not significant.

Note that there is no sign of the big droughts of 2007/08, 2008/09 and 2011/12, which seemingly did not affect the highland areas providing the bulk of the basin rainfall.

Main Conclusions

14. Euphrates and Tigris Basin



In term of rainfall tendencies in the past 20 years, the wetter areas of the basin have not been subjected to strong decreasing trends in rainfall unlike areas inside Iraq as seen before.

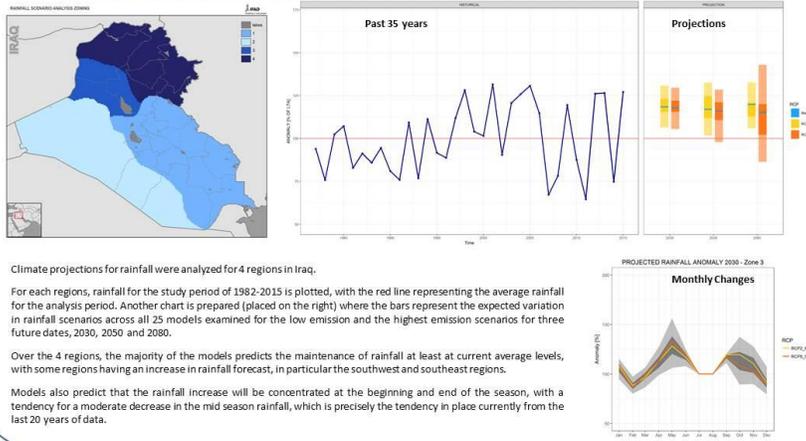
In contrast, the basin shows strong warming trends in Tmax along the highlands of northern Iraq and the higher reaches of the basin inside Turkey.

These temperature trends will impose some disruption on the amount and temporal distribution of snow cover, possibly shifting more of the annual basin precipitation into the form of rainfall. This is likely to change the temporal pattern of river flow volumes and the temporal pattern of water available for irrigation.

These impacts need to be confirmed with recourse to long term snow cover and snow water equivalent and discussed with local experts on irrigation requirements and timing.

Main Conclusions

15. Climate Projections: Rainfall



Climate projections for rainfall were analyzed for 4 regions in Iraq.

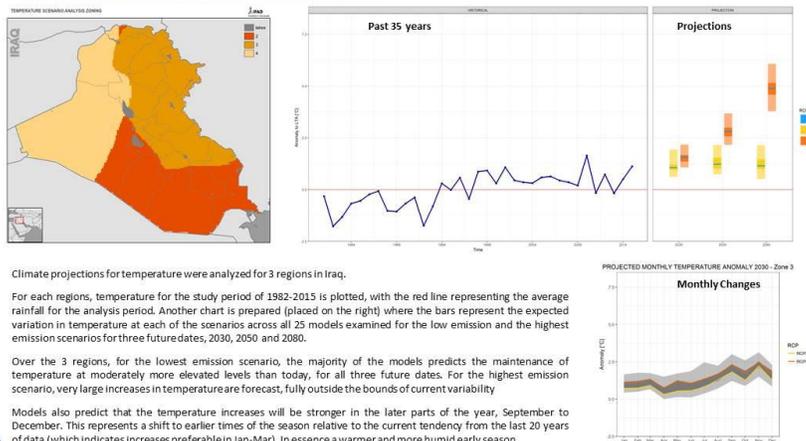
For each region, rainfall for the study period of 1982-2015 is plotted, with the red line representing the average rainfall for the analysis period. Another chart is prepared (placed on the right) where the bars represent the expected variation in rainfall scenarios across all 25 models examined for the low emission and the highest emission scenarios for three future dates, 2030, 2050 and 2080.

Over the 4 regions, the majority of the models predicts the maintenance of rainfall at least at current average levels, with some regions having an increase in rainfall forecast, in particular the southwest and southeast regions.

Models also predict that the rainfall increase will be concentrated at the beginning and end of the season, with a tendency for a moderate decrease in the mid season rainfall, which is precisely the tendency in place currently from the last 20 years of data.

Main Conclusions

16. Climate Projections: Temperature



Climate projections for temperature were analyzed for 3 regions in Iraq.

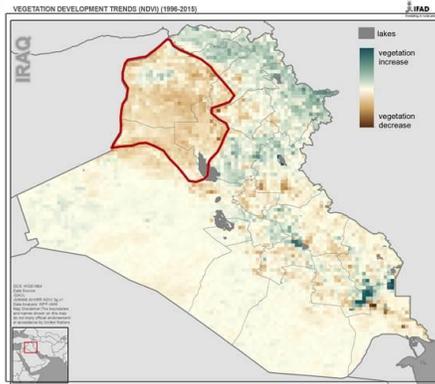
For each region, temperature for the study period of 1982-2015 is plotted, with the red line representing the average rainfall for the analysis period. Another chart is prepared (placed on the right) where the bars represent the expected variation in temperature at each of the scenarios across all 25 models examined for the low emission and the highest emission scenarios for three future dates, 2030, 2050 and 2080.

Over the 3 regions, for the lowest emission scenario, the majority of the models predicts the maintenance of temperature at moderately more elevated levels than today, for all three future dates. For the highest emission scenario, very large increases in temperature are forecast, fully outside the bounds of current variability.

Models also predict that the temperature increases will be stronger in the later parts of the year, September to December. This represents a shift to earlier times of the season relative to the current tendency from the last 20 years of data (which indicates increases preferable in Jan-Mar). In essence a warmer and more humid early season.

Main Conclusions

17. Climate Risk



Climate Risk for Iraq is considered Moderate except for the region highlighted in the map which is considered to have a High Climate Risk.

High Climate Risk region: This region has been registered the highest drought severity in the four major droughts of the 2007-2014 period. It shows a long term tendency for decreasing rainfall in the past 20 years accompanied by a corresponding decreasing tendency and high inter-annual variability in vegetation cover.

The other regions in the northern part of Iraq are undergoing a warming tendency in winter months coupled with increases in rainfall in the early stages of the rainfall season (September-November). This has led to significant increases in vegetation cover as well as a shift in the timing of green up towards earlier stages of the season.

The south-eastern regions dominated by irrigated agriculture have also seen similar developments though less remarkable. Current decreasing trends in rainfall may not have much of an impact given the very small amounts of the current climate and the dependence on irrigation for agricultural production.

As far as can be evaluated, the rainfall in the higher reaches of the Euphrates and Tigris basins although somewhat lower than in the 1980s has stabilized in the past 20 years. Inter-annual variability is considerable but has not changed significantly and these areas do not seem to have been affected by the severe droughts of the past 10 years.

Question marks remain as to the possibility of further severe droughts in the next few years. However, all models under all scenarios do not point to a decrease in rainfall amounts.

One question that remains unexplored is the effect of the rising temperatures in the extent of snow cover and snow water equivalent and therefore on the dynamics of snowmelt and on the timing of water supply. A reduction in snow water storage is a very likely scenario given the extremely likely further rise in temperatures in the highlands of the basin. This needs to be discussed with local experts on what might be possible consequences for irrigated agriculture in Iraq.

A final issue is the investigation of how much of the vegetation trends within the irrigated regions are due to land use changes and other human led influences rather than climate. This analysis can flag a wide number of such features for finer analysis involving local expertise.

Main Conclusions

The analysis used a 34 year long gridded rainfall record (CHIRPS) from 1982 to 2015, a gridded temperature record covering the same time span and a satellite vegetation index data set also covering the same period.

The rainfall season in Iraq lasts from October to June. Annual rainfall amounts are tied closely to the country's orography: only in the north-east of the country annual rainfall is enough for viable rain-fed agriculture. However, inter-annual variability in annual rainfall is considerable and represent a more important constraint faced by rain-fed agriculture.

An initial analysis of the temporal variations of all Iraq rainfall for the study period, revealed the existence of a wetter and less variable period lasting from 1992 to 2006, preceded by a more variable period. The more striking change takes place after 2006 – the start of a period with extreme inter-annual variability including 3 of the 5 wettest years and 4 of the 5 driest years in the 36 year record.

Based on this, the following analysis was carried out for the complete analytical period and for two shorter sub-periods of 20 years each (1982-2001 and 1996-2015) with a short overlap. The first with a predominant increasing rainfall, lower variability pattern, the second with predominant decreasing rainfall with high variability.

Annual rainfall shows variable tendencies across Iraq. Over the study period 1981-2015, the south and central east of Iraq (essentially the irrigated agriculture regions) show a tendency for increasing annual rainfall, in contrast with a tendency for drier than average conditions in the westernmost areas bordering Syria. Northern areas show no defined tendency. Looking at the two sub-periods the changes from a generally increasing rainfall pattern to a generally decreasing rainfall pattern are evident.

The overall trends show particular distribution along the year: positive proportional trends are stronger both at the beginning and end of the rainfall season (last and second quarter of the year respectively). The implication is that the rainfall season is starting sooner and ending later across much of Iraq, increasing soil moisture reserves during autumn and early winter.

Average annual temperatures (mean, max and min) in Iraq reach a maximum in the southeastermost areas of the country and show a marked general decreasing tendency towards the westernmost and northernmost regions.

All temperatures show significant increasing trends over the past 36 years, though with particular features: northern areas display the strongest warming trends in maximum temperature but the weakest warming trend in minimum temperature. The reverse is true for the south of the country. Temperature amplitudes therefore should be widening in the north and narrowing in the south of the country.

Trends in mean maximum temperature are the most intense and assume particular importance in the northern regions of Iraq during the first quarter of the year.

The impacts of this warming trend across the full daily and seasonal temperature cycle are several:

- earlier starts in vegetation and winter crop development;
- increased water demand on crops (particularly summer crops) through increases in potential evapotranspiration;
- problems in development of summer crops due to higher temperature extremes;
- poor pasture and water resource conditions.

Vegetation cover in Iraq is mostly confined to northern areas with 300mm or more of annual rainfall and along the extensive irrigated agriculture plains in the center and southeast of the country. Irrigated cropland shows an early vegetation peak in March and a second less intense in September (second season crops). Natural vegetation or rain-fed crops show a single seasonal peak in April-May.

Within the study period, vegetation cover shows well defined trends – broadly these include positive (vegetation increase) trends in the irrigated agricultural plains and in the northeastern regions of the Iraq. Northwestern areas near the border with Syria between the two major rivers, show a decreasing trend towards more reduced vegetation cover. The decrease in wetland vegetation is also very much in evidence. In higher resolution maps, there is a considerable mix of increasing and decreasing vegetation cover within the irrigated areas, likely reflecting changing occupancy rates of cropland.

Main Conclusions

Vegetation cover trends have changed in time with the first 20 years of the 1981-2015 period being characterized by increasing vegetation trends across most of Iraq. It's in the last 20 years that the decreasing vegetation trends are more noticeable, in particular in the northwestern areas between the Euphrates and the Tigris; the irrigated areas still display a tendency for increasing vegetation cover.

These patterns are shown in greater evidence in high resolution trend maps from the MODIS-Terra satellite over a slightly shorter period (2001-2015): the northwestern decrease in vegetation is shown clearly; and while the majority tendency over irrigated areas is still of increasing vegetation cover, there is a considerable mix of increasing and decreasing vegetation cover within the irrigated areas, likely reflecting human driven cropland dynamics during this period.

The signals detected in the vegetation data make up the response of the land surface to the main drivers, rainfall, temperature and human intervention – therefore the vegetation response should be consistent with the behavior of the drivers during the period of the analysis.

- The decrease in vegetation cover in the northwest regions between the Euphrates and Tigris and the Syrian border that occurred in last 20 years, matches the decrease in rainfall amounts that was also detected for this region, within the same period; this includes three major droughts, two of which are likely to establish long term records / without equal in the last 50 years. The impact is mainly seen in a systematic decrease in the maximum vegetation cover usually reached in April.
- The sharp decrease in vegetation around the south-eastern wetlands is related to the large scale reclamation and wetland draining that took place since the early 90s and which came to an end in 2003. The dramatic transformation is clearly signaled in the sharply negative NDVI trend for the 1982-2001 period, particularly concentrated in the summer months; this is followed by a sharply positive NDVI trend for the 1996-2015 period, which covers a phase of recovery in wetland extent with corresponding increases in vegetation cover during the summer months.

- The northernmost and northeast areas of Iraq show strong tendencies for increasing vegetation. This is attributed to the strong warming during January to March in these regions, leading to increasingly earlier vegetation development, which is strongly temperature controlled. Decrease in snow cover would also contribute to the same outcome. Increases in rainfall during the early stages of the season (September-November) may play an additional role by increasing soil moisture storage prior to the main growth of vegetation a couple of months after.

- Vegetation data over the irrigated agricultural areas also shows mostly an increasing trend. Although increasing rainfall trends are noticeable for the region during the last quarter of the year, these might only help planting and establishment of winter cereal. Warmer temperatures are likely to be the major driver in an increasingly earlier emergence of vegetation.

Rainfall projections: the majority of the models predicts the maintenance of rainfall at least at current average levels, with some regions having an increase in rainfall, in particular the southwest and southeast regions.

Models also predict that the rainfall increase will be concentrated at the beginning and end of the season, with a tendency for a moderate decrease in the mid season rainfall, which is precisely the tendency in place currently from the last 20 years of data

Temperature projections: for the lowest emission scenario, the majority of the models predicts the maintenance of temperature at moderately more elevated levels than today, for all three future dates. For the highest emission scenario, very large increases in temperature are forecast, fully outside the bounds of current variability

Models also predict that the temperature increases will be stronger in the later parts of the year, September to December. This represents a shift to earlier times of the season relative to the current tendency from the last 20 years of data (which indicates increases preferable in Jan-Mar). In essence a warmer and more humid early season.

Appendix 4

IFAD's Gender-sensitive design and implementation checklist

	BRAC Project Design
<p>1. The project design report contains – and project implementation is based on - gender-disaggregated poverty data and an analysis of gender differences in the activities or sectors concerned, as well as an analysis of each project activity from the gender perspective to address any unintentional barriers to women's participation.</p>	<p>The design is based on a succinct analysis of gender issues in the sectors concerned, and on gender-disaggregated poverty data available at the time (from government, development agencies, and research institutions). Notwithstanding severe constraints, some attempts have been made to analyze gender differences through several semi-structured interviews conducted in rural communities in the 4 target Governorates of Muthenna, Qadisiya, Missan and Thi Qar. NGOs will be recruited with ToRs that specify that they are expected to fine-tune this type of analysis on a continuous basis; they will be asked to keep field diaries to capture their learning as implementation experience accumulates and to highlight unintentional barriers to women's participation and possible solutions.</p>
<p>2. The project design report articulates – or the project implements – actions with aim to:</p> <ul style="list-style-type: none"> • Expand women's economic empowerment through access to and control over productive and household assets; 	<p>The main livelihood supporting activity under BRAC is to facilitate access to productive assets to project beneficiaries of whom approximately 40 percent will be women. At least in agriculture, control over these assets by women will be more difficult to achieve given heavy socio-cultural constrictions. This situation is expected to be less pronounced (more empowering for women) in the case of small livestock, and off-farm activities.</p>
<ul style="list-style-type: none"> • Strengthen women's decision-making role in the household and community, and their representation in membership and leadership of local institutions; 	<p>The economic empowerment of women will gradually increase both their weight in intra-household decision-making as well as their social status and prominence in community affairs.</p>
<ul style="list-style-type: none"> • Achieve a reduced workload and an equitable workload balance between women and men. 	<p>The extent to which workload reduction for women can be promoted explicitly in the project area will need to be assessed during the MTR.</p>
<p>3. The project design report includes one paragraph in the targeting section that explains what the project will deliver from a gender perspective.</p>	<p>There is such a paragraph and it explains the BRAC's gender perspective on a range of issues including awareness raising and men's evolving perceptions of gender roles in Iraq as a whole, and in the project area in particular.</p>
<p>4. The project design report describes the key elements for operationalizing the gender strategy, with respect to the relevant project components.</p>	<p>It does. Under Component 1, the selection of productive infrastructure will need to be endorsed – separately – by women. Component 2 is the main vehicle of implementing the BRAC gender strategy as it is focused on the economic empowerment of women.</p>
<p>5. The design document describes - and the project implements -</p>	

operational measures to ensure gender- equitable participation in, and benefit from, project activities. These will generally include:	
<i>5.1 Allocating adequate human and financial resources to implement the gender strategy</i>	The budget earmarks resources for activities specifically targeted at women.
<i>5.2 Ensuring and supporting women's active participation in project-related activities, decision-making bodies and committees, including setting specific targets for participation</i>	The specific target for women's participation is approximately 40 percent. Most of the NGOs that will be recruited under BRAC are likely to come from a humanitarian background and specializing in reaching out to women (especially female-headed households).
<i>5.3 Ensuring that project/programme management arrangements (composition of the project management unit/programme coordination unit, project terms of reference for staff and implementing partners, etc.) reflect attention to gender equality and women's empowerment concerns</i>	The strong role played by NGOs in project implementation is expected to ensure attention to gender equality and women's empowerment. These will also feature in the ToRs of all other staff hired by the project.
<i>5.4 Ensuring direct project/programme outreach to women (for example through appropriate numbers and qualification of field staff), especially where women's mobility is limited</i>	In some Governorates female public extension workers constitute half of the total number of public extension workers; female NGO staff vastly outnumber male NGO staff.
<i>5.5 Identifying opportunities to support strategic partnerships with government and others development organizations for networking and policy dialogue</i>	Elected female Provincial Councilors may sit on the project committee. Both directorate of agriculture staff and NGO staff involved in the implementation of BRAC will liaise with the Committee for Women of the Provincial Councils. UNIDO targets women entrepreneurs and the project will partner with these activities.
6. The project's logical framework, M&E, MIS and learning systems specify in design – and project M&E unit collects, analyses and interprets sex- and age-disaggregated performance and impact data, including specific indicators on gender equality and women's empowerment.	It does. Sex- and age-disaggregated performance and impact data will be collected, analysed and interpreted; specific indicators on gender equality and women's empowerment will be developed before the MTR.