



## ADAPTATION FUND

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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	Syrian Arabic Republic
Title of Project/Programme:	Climate change resilient communities through integrated natural resource management in Eastern Ghouta in Rural Damascus, Syria
Type of Implementing Entity:	Multilateral Implementing Entity
Implementing Entity:	UN-Habitat
Executing Entities:	UNDP, FAO
Amount of Financing Requested:	US\$ 10 million

### Project Background and Context:

#### *Introduction*

1. The Syrian Arab Republic, due to its geographical location within the arid and semi-arid regions, is highly vulnerable to the effects of global warming and climate change in its various dimensions. This is manifested in climatic phenomena that have not been committed previously, such as retention of precipitation, change in precipitation, rainstorms, draught of rivers or decrease of its levels and the levels of natural and artificial lakes, frequent droughts and increased risks, unprecedented high temperatures, heatwaves and forest fires, and the increase in the number and frequency of sand and dust storm days. The effects of these climatic phenomena impact all social and economic sectors and represent a threat to livelihoods, agricultural productivity, water availability and community health.
2. The crisis has exacerbated these threats since it led to a weak and deteriorating adaptive capacity resulted from damaged infrastructure, limited institutional capacity, the rapid resettlement of displaced people, returning refugees and the level of poverty. This vulnerability is expected to worsen in the future, as such, capacity-building for climate adaptation across the country is of supreme importance.
3. Given the above context, the proposed Adaptation Fund (AF) project will introduce an integrated approach to natural resource management, particularly water, to develop the climate resilience of rural and peri-urban communities in Syria. The proposed project's activities will focus on one of the most climate-vulnerable areas, namely Eastern Ghouta in Damascus Governorate. Integrated natural resource management strategies will be developed for these areas. The strategies will provide detailed guidelines for suitable management of water resources interventions, both for agricultural and urban purposes, to reduce the vulnerability to climate change.
4. Important principles underpinning the strategies will include: i) climate risks to be managed at a range of spatial scales (catchment and watershed); ii) upstream-downstream interactions at different time scales to be understood by planners and decision-makers; iii) long-term development plans for Eastern Ghouta to include a focus on climate risk management; iv) a cross-sectoral and integrated approach for managing water resources, urban areas, agricultural land and forests at the watershed level; v) water resources to be protected (eg recycling, pollution prevention, and CRA practices); and vi) capture and sharing of lessons learnt within Eastern Ghouta to promote future national upscaling and replication of the project's activities.

5. Complementing the catchment strategies, the proposed project will directly build the resilience of selected communities by: i) implementing on-ground infrastructure such as water/wastewater treatment and water efficient irrigation systems; ii) introducing drought tolerant crops and livestock; iii) demonstrating alternate technologies and methodologies for agriculture; iv) capacity building, demonstration of tech, intro of CRA etc (ie livelihood stuff)

## *Geographic, Environmental and Socioeconomic Context*

### **Geographic and Environmental Context**

6. Syria is located on the eastern coast of the Mediterranean Sea. The total area of the Syrian Arab Republic is 18,517,971 hectares, of which about 6 million hectares are agricultural lands and the rest are mountains and valleys. The Syrian Badia is suitable for growing grasses and is used as a pasture when enough rain falls. Syria can be divided from a natural geographical point of view to four regions:
  1. Coastal Region: confined between mountains and sea.
  2. The Mountainous Region: Mountains and highlands stretching from the north to the south parallel to the Mediterranean Sea.
  3. Inner area or plains Region: It includes the plains of Damascus, Homs, Hama, Aleppo, Hassakeh and Daraa, located in the eastern mountain area.
  4. Badia Region: the desert plains located in the south-east on the Jordanian and Iraqi borders.
7. Syria is one of the dry, semi-arid countries, and two-thirds of its area are considered very arid and this is directly reflected in the renewable water resources in the Syrian Arab Republic. The mountain series which form the border between Syria and Lebanon play a major role in influencing the rainfall; it forms as a barrier to wet aerial pressure coming from the Mediterranean Sea. As a result, most of the rain falls on the coast and on the mountain peaks. Only strong aerial low pressures that across these chains reach the inner plains

### **Socioeconomic and Development Context**

8. The population in Syria reached about 21,124 million people in 2011<sup>1</sup>. The average population growth rate during the years 2010-2014 was about 0.4%, while the per capita GDP reached SYP 122834 to fall to SYP 60249 in 2015 with an annual decline of 11.9<sup>2</sup>%. The terrorist war on Syria caused an internal migration movement and then the percentage of the population of some governorates in the total population. The rate of internal migration reached 32.9% in 2012 and increased until 2014, beginning to decline in 2015. In addition to the external migration, that caused an imbalance in the demographic composition of the population, where the total number of migrants since the beginning the war until the end of 2015 is about 4078079 people from various Syrian regions.
9. The Syrian Arab Republic is divided into 14 governorates with different areas, resources and population. Each governorate is divided into city, town, municipality<sup>3</sup>.
10. The devastating war has set the country back decades in terms of economic, social and human development. The conflict in Syria continues to take a heavy toll on the life of Syrian people and on the Syrian economy. Several major urban centres and industrial areas have been devastated. Moreover, the crisis has resulted in destruction of essential basic services, infrastructure and key economic sectors, which have served as a basis for people's livelihoods. The crisis in Syria continues to have a negative impact on the lives of the Syrian

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<sup>1</sup> 2018 central statistics

<sup>2</sup> National SDG report

<sup>3</sup> Decree 107 -2011

people and the Syrian economy because of the unilateral coercive economic measures imposed on the Syrian Arab Republic for several decades, which have been tightened since 2011

11. Syria's GDP today is less than half of what it was before the war started and it could take two decades or more for Syria to return to its pre-war GDP levels; and while reconstructing damaged physical infrastructure will be a monumental task, rebuilding Syria's human and social capital will be an even greater and lasting challenge.
12. Agriculture is the backbone of the Syrian economy, employing one fourth of the labour force and contributing 24% of GDP (2008). Two third of the cultivated land is rainfed and the remainder relies upon groundwater.
13. While the scale of damage and needs caused by the Syrian crisis requires continuation of the humanitarian response in many parts of the country, stability across major population centres - with the exception of certain parts of the North East and North West of Syria - and a rising number of returnees, accentuate the need for basic services (such as water and sanitation) and livelihood opportunities to restore a basic level of coping, reduce tensions, and support social cohesion amongst returnees, Internally Displaced Persons (IDPs) and host communities.
14. However, in the current transition period, while the national government is working on a rehabilitation strategy, some issues are hampering rehabilitation efforts, including climate change impacts such as water scarcity. Therefore, it is necessary to respond to climate change impacts as part of a rehabilitation strategy.
15. Priorities for adaptation to water scarcity are to reduce vulnerability, achieve sustainable agricultural production, and conserve the environment. This requires significant change in the management of water resources, policies and associated infrastructure.

### *Climate and Climate Vulnerability*

16. Syria is ranked 139 based on ND-GAIN data<sup>4</sup>, down from 104 in 1995, making it's the 79th most vulnerable country and the 13th least ready country.

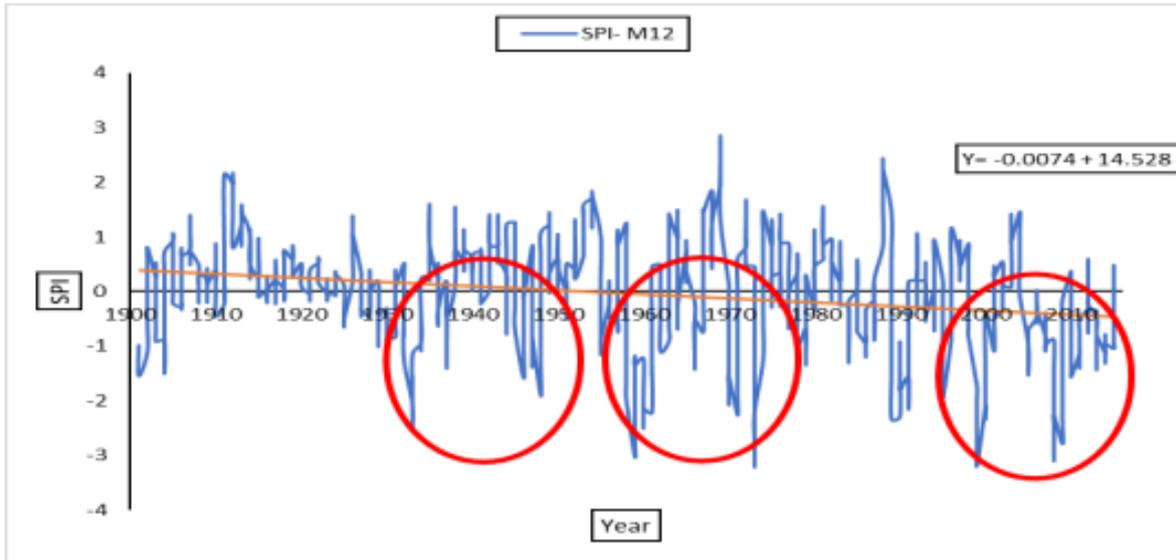
### **Current climate variability**

17. The climate in Syria is Mediterranean, characterized by cold and winters with rain and hot and dry summers. The two main seasons are separated by relatively two short transitional seasons. During winter, temperatures are moderate to cold, though frost can form in mountains during the night. The annual average of precipitations in Syria (300 mm) is low when compared with the world's average (720 mm). In summer, temperatures rise to more than 30 °C in most regions and at times can go above 40 °C. The weather during this season is usually very dry, with a high evaporation level (about 1200 mm/year on the coast and more than 2600 mm/year in the eastern area).
18. **Rainfall:** Rainfall patterns over the Middle East, including Syria, have declined over the past four decades with a gradually declining average rainfall since around 1940<sup>5</sup>. Nearly all rainfall in the region occurs during winter (November – April) and exhibits large natural year-to-year variability, but the observation data show new record lows in the past three decades, especially in the northern and north-eastern zones of Syria.
19. **Temperature:** Average temperature has been steadily increasing for most of the past century with a sharp rise since the 1980s – and most extreme increase in the summer months. In addition to higher average temperatures, the number, intensity and length of heat waves in the eastern Mediterranean has increased.

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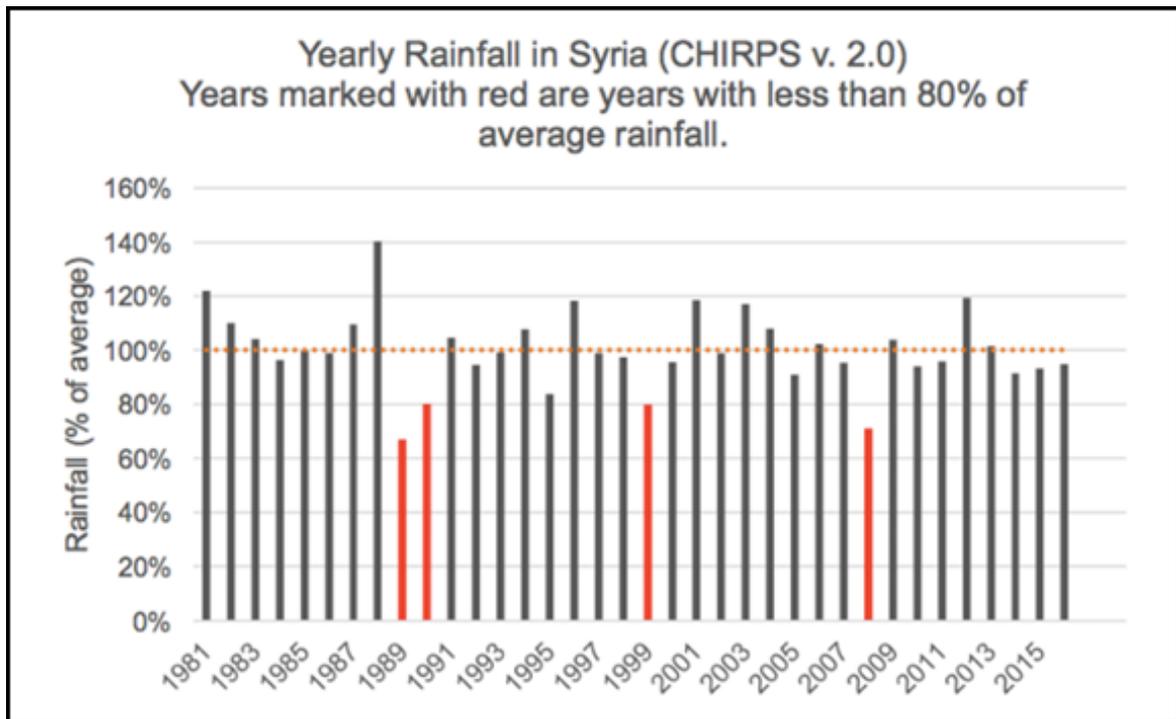
<sup>4</sup> <https://gain.nd.edu/our-work/country-index/rankings/>

<sup>5</sup> Mohammed, Safwan & Alsafadi, Karam & Mousavi, Seyed Mohammad Nasir & Harsányi, Endre. (2019). Drought Trends in Syria from 1900 to 2015.



**Figure 1 Standard Precipitation Index (SPI) for Syria 1900-2015. (Mohammed et al 2019)**

**Droughts:** Higher temperature means higher evaporation, so the combination of rising average temperatures and declining rainfall increases the water stress and can result in droughts Syria suffered from several drought's period, including the drought that occurred in 1999, which caused the loss of 40% of the grain crop, and the other occurred in Syria in general and in the Eastern region in particular during the 2007-2008, which was the worst drought over the past 50 years<sup>6</sup>.



**Figure 2 : Annual rainfall in Syria 1981- 2016**

20. Century-long observed trends in precipitation, temperature, supported by climate model results, strongly suggest that anthropogenic forcing has increased the probability of severe and persistent droughts in this region, and made the occurrence of a 3-year drought as severe

<sup>6</sup> Drought report ( 2000-2015)

as that of 2007–2010 two to three times more likely than by natural variability alone. However, the magnitude and frequency of the drying that has occurred is too great to be explained by natural variability alone, so anthropogenic drivers are also playing a role.

### **Climate projections**

21. The Mediterranean, Middle East and northernmost North Africa are among the areas of the globe where all scientific projections agree<sup>7</sup> that the rainfall will continue to diminish over the coming decades – and average temperatures will continue to increase. Analyses<sup>8</sup> of the implications of IPCC's intermediate climate scenarios for the eastern Mediterranean, including Syria, indicate:

- Average summer temperatures will gradually increase 0.5–0.9° C per decade over much of the region and will be higher than the global average for both reference and policy scenarios.
- The number of warm days will increase by 50–60 additional days/year by the end of the 21st century
- Rainfall may decrease – the number of rainy days may decrease by 5–15 days at mid-century
- It is expected that the annual rainfall will typically decline by 5–25% in 2040–2069 (although rainfall reduction is less certain in period up to 2040<sup>9</sup>)
- The annual number of heat wave days may increase, and drastically so by the end of 21st century.

### **Climate vulnerability and exposure**

#### ***Potential implications: Water resources:***

- Increased temperatures and continued decreases in annual precipitation (with increased likelihood of droughts) induce worsening water scarcity in Syria.
- With no standing national drought management or response capacity (Sweet, 2005), the drought of 2006-2010 exposed Syria's water insecurities.
- Reduced available water supplies and adversely affected the quality of water, thereby aggravating water resources management problems in the country.
- Groundwater levels in many of the country's water basins is of great concern to national authorities, due to its social, economic and political implications.
- Due to sectoral and urban – rural competition for water, most Syrian cities currently have a water supply deficit and rapid urbanization combined with water deficit increases the pressure on water supply even more, both for urban and rural areas.

#### ***Potential implications: Agriculture:***

- The projected lower rainfall in the Eastern Mediterranean, Turkey, Syria, and Northern Iraq is likely to further damage rain fed agriculture in vast areas, and longer dry seasons will reduce the length of time that the rangelands can be grazed.<sup>10</sup>
  - Variations in the amounts and timing of rainfall can cause substantial shifts in areas planted, productivity and yields in most of the major agro-ecological zones in the country.
  - Water availability for agriculture will be further reduced placing greater strain on existing irrigation practices
  - The pace of land degradation and desertification is accelerating
22. Hence, with climate change impacts threatening the existing agricultural systems, particularly those that are dependent on unsustainable and dwindling water sources, the future outlook for production of water-demanding crops is bleak and the population still engaged in the agricultural sector (25-30%) may be even more vulnerable.

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<sup>7</sup> IPCC (2013 and SR15)

<sup>8</sup> Lelieveld J, Hadjinicolaou P, Kostopoulou E, Chenoweth J, El Maayar M, Giannakopoulos C. et al. (2012) Climate change and impacts in the eastern Mediterranean and the Middle East. *Clim Change*, 114 (2012), pp. 667–687

<sup>9</sup> IPCC (2013) – see above

<sup>10</sup> Evans JP (2009): 21st century climate change in the Middle East. *Climatic Change* (2009) 92:417–432, DOI 10.1007/s10584-008-9438-5

23. In short, current agricultural and natural resource management policies as well as climate change have affected the current state of agricultural, farming system, making it important to consider the current and future changes in climatic in the post-crisis recovery phase. Water-related challenges will increase in the coming decades as projected temperatures rise, rainfall and groundwater resources reduce.

### **Socioeconomic Situation**

24. Prior to the crisis, Syria already faced substantial environmental challenges including water scarcity, water pollution, soil degradation, air pollution, inappropriate treatment of solid waste, etc.
25. The water deficit in 2008 stood at around 2.4 billion cubic meters. This was mainly due to increasing demand on surface and ground water for agricultural use, with 89% of water being used for agricultural irrigation before the crisis.<sup>11</sup> Key recommendations of the Third National MDG Progress Report 2010 therefore already included the need for more efficient water use in agriculture in order to reduce the water deficit without negatively affecting agricultural production. Availability of drinking water and sanitation in Syria had steadily improved before the crisis.
26. In addition to water scarcity, water quality in Syria was relatively poor, especially in areas with high economic activity. The reuse of untreated wastewater in agriculture has led to polluted surface and groundwater. This affected the quality of drinking water, and contaminated river water used for irrigation. The resulting health risks were addressed in the 10th Five-Year Plan (2007-2011) which set out to establish 200 water treatment plants that would reach about 50 percent of the population.<sup>12</sup> However, due to the crisis, these were not constructed.

### **Adaptation challenges**

27. In Syria, major changes in geographical distribution of the population, settlement patterns and agricultural reforms have aggravated pressure on natural resources, increased water demand and - as a consequence - escalated vulnerability of people and ecosystems. These challenges include:
- Environmental challenges, which are many; in addition to climate variability and drought, they include: deforestation, desertification (according to UN in 2010, 80 % of Syria is prone to desertification based on FAP definition) soil erosion, soil salinization, overgrazing
  - the war has caused enormous damage to the country's essential water and sewage systems putting millions of people at risk of waterborne diseases and creating huge challenges for the sector.

Population increase - Syria witnessed rapid population growth in the 20th century, with the population increasing from about 4.565 million to about 21,124 million at the end of 2011<sup>13</sup>. During the war years, drinking water was significantly reduced per capita, and the negative effects of drought and low water stocks were deepened. After reaching 119 liters / day in 2011, the per capita water consumption declined gradually to 80 liters / day in 2015, affected by the decrease in water produced for drinking purposes (12%) between 2011 and 2015, and an increase in the rate of wastage (34%) in 2010 to (49%) in 2015 due to damaged networks and inability to replace or rehabilitate the old and damaged one<sup>14</sup>

- Rapid urbanization has increased water demand in urban areas, reduced agriculture land and increased pollution, negatively impacting clean water availability and supply.
- Agriculture accounts for almost 90% of the country's water consumption.<sup>15</sup>
- Most of Syrian irrigated agriculture is in need of modernization, still relying on highly inefficient irrigation.

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<sup>11</sup> Syrian Arabic Republic (2010). Third National MDG Progress Report 2010 IPCC report. Kelley and all

<sup>12</sup> Ibid.

<sup>13</sup> Central Bureau of Statistic in Syria CBS

<sup>14</sup> MDG report

<sup>15</sup> Syrian Arabic Republic (2010). Third National MDG Progress Report 2010

According to agricultural statistics for 2107, 77% of agricultural land is irrigated from groundwater while 23% is rainfed and dependent on rain precipitation, which is increasingly rare.

### **Social implications:**

In the past, the drought cycle has been around 55 years, but it has shrunk to 27 years and then dropped further to 13 years to 7 or 8 years. Syria has recently been exposure to several droughts, including the drought in 1999 which caused 40% of the grain crop harvest failure , and the other occurred in Syria in general and in the Eastern region in particular during the 2007-2008 season, where it was the worst drought in the past 50 years . More than 800,000 households of sheep farmers, and farmers have been affected by this severe drought. This impact has been reflected in low income, declining crop yields, the loss of fixed portion of agricultural assets - and the declining nutritional and health status of households and the eastern region communities. This drought has also led to the migration of many families to drought-affected villages and communities, resulting in a new situation with added pressure on natural resources, facilities and basic services on the host cities.

### *Overview of the target area*

28. Global, MENA- region and National climate change models have been used to understand climate change impacts in Syria and to justify this project, focused on addressing water-related challenges in Syria and specifically in the target areas.
29. The Syria Initial National Communication and Climate Change Atlas of Syria assessed the impact of climate change on water resources, reflected in an overall decrease in precipitation and increased temperature and droughts, for the Brada and Awag basin, which includes the Fijeh spring and Barada river and Zabadani sub-basin (as a resource of drinking water in Damascus and agriculture in Eastern Ghouta).

In the target area the river Barada penetrates Ghouta almost in the middle and by passing through the Damascus plain to its outlet in Lake Otaiba to the east is characterized with a tendency not exceeding 2.5 m / km and relatively slow flow speed,. The total length from the source up to the downstream is between 71 and 82.3 km and decreases the discharge of the river towards its outlet to drought due to its water use in irrigation and the water of the spring of Barada in drinking. The river feeds from Mount Hermon, The impacts of climate change are expected to affect both snowfall (precipitation) and evaporation (through warming), this may greatly affect the river flow curve.

30. The Barada descends through a steep, narrow gorge before it arrives at Damascus, where it divides into seven branches that irrigate the Al Ghoutah oasis, the location of Damascus. Since ancient times, canals dug by Damascenes provided irrigation of land on either side of the Barada, and historically providing its inhabitants with a variety of cereals, vegetables and fruits. The river has suffered from severe drought in the last decades, mainly due to the lower rainfall rates and the large increase in the population in the area. It also suffers from serious pollution problems, especially in the summer, where there is almost no flow and little water in the basin.
31. A study carried out in 2007 by the Arab Center for the Studies of Arid Zones and Dry Lands in Damascus<sup>16</sup> showed that a 5% decrease in rainfall would cause the Barada spring to dry up entirely by 2040. However, climate models predict a 5–25% decrease in rainfall by 2050.<sup>17</sup> Going forward, climate change is likely to have severe consequences for water availability in the larger Damascus area. Therefore, the Syrian Ministry of Local Administration and Environment (MoLAE) has identified the Barada watershed in Eastern Ghouta (Damascus governorate) as a vulnerable area and the main project priority (see consultation section).

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<sup>16</sup> Waterless Wadi Barada: Manufacturing Scarcity in a Syrian River Valley <https://www.merip.org/mer/mer271/waterless-wadi-barada>

<sup>17</sup> Ibid



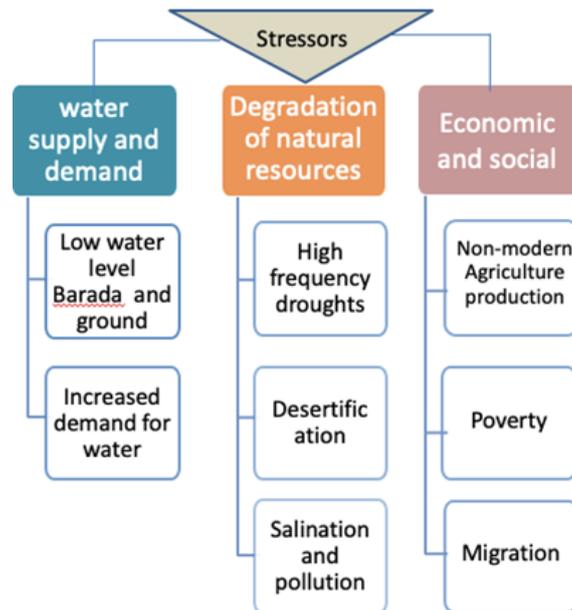
**Figure 3 Eastern Ghouta and Barada River passing through (circle)**

During the crisis, most of the Ghouta inhabitants in target area displaced to or outside Damascus, but recently people began to return. For IDPs / returnees, the "perspective" of return is critical, including the restoration of their livelihoods. where Historically, the region was a green belt along the Barada River. The region has previously produced fruits, vegetables and grains (most of which are now fruit trees)<sup>18</sup> Since 1980, the region has begun to shrink due to urbanization in the west and desertification in the east, where the Barada River no longer reaches Lake Otaiba in the east side of Ghouta. Jaramana the biggest town is in the Ghouta plain, 3 km southeast of Damascus. Its population in 2004 was about 114,000 people, while in 2018 it was 589,000 people, of which 287,000 were displaced from neighboring areas. This urban trend has led to an increase in the quantities of wastewater and the transformation of agricultural land into urban, which reduces the agricultural land and available water in the eastern Ghouta both for drinking and irrigation

### **Climate change vulnerabilities assessment and hot-spot mapping**

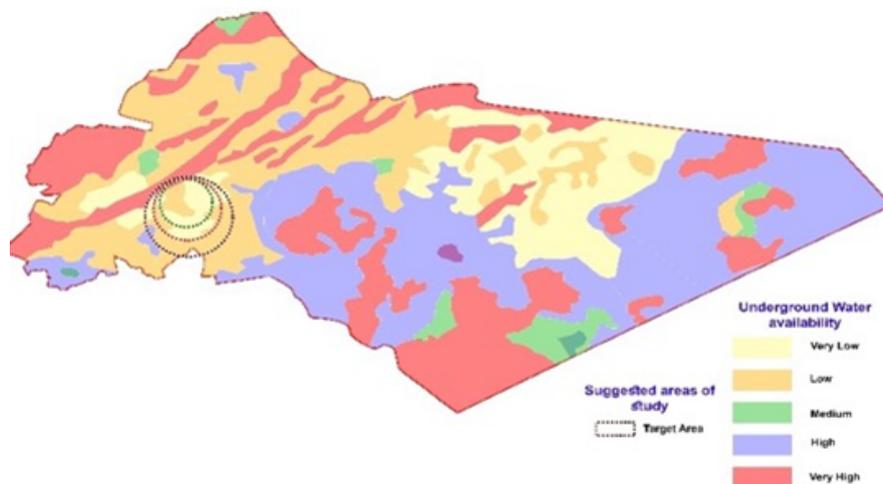
32. A rapid climate change vulnerability assessment and hotspot mapping of Eastern Ghouta has been undertaken by the Syrian Ministry of Local Administration and Environment (MoLAE) and UN-Habitat. Main stressors identified are shown in Figure 4 .
33. The mapping and analysis revealed that droughts / water scarcity are major issues in both urban and rural areas. Desertification and salination is a problem in the least populated eastern part of eastern Ghouta (around Ateibeh Lake). In the larger urban areas in the west (including Jaramana, Aqraba), availability of drinking water is also a problem. Data and inputs from mayors reveal that the not only water availability a problem, but also spread of untreated wastewater from the larger urban areas in the west to agriculture areas in the east pose urgent problems, i.e. threatening wells that are still relatively clean and used for both drinking purpose and agriculture irrigation and, in some cases, livestock production, and thus further exacerbating climate change impacts.
34. Consultations conducted in Mleha / Rural Damascus (refer Section H), revealed that wastewater was flooding into agricultural areas noting that the sewage system of Jaramana Area (Nearby Village) is also passing through Al Mleha area and increase the flooding of sewage in area, which leads to contamination of the water and disease outbreaks.

<sup>18</sup> Al Zoughbi, Samira (2005). "An Analysis of Agriculture-Environment Interactions and Policy Options for Sustainable Agriculture in Eastern Al Ghouta (Syria)" (PDF). Farming Systems and Poverty: Making a Difference -- Proceedings of the 18th International Symposium of the International Farming Systems Association: A Global Learning Opportunity. Food and Agriculture Organization of the United Nations. p. 31. Retrieved 17 February 2016



**Figure 4 : Simplified overview main stressors in Eastern Ghouta**

35. Jaramana has a large population (Figure 6 and Table 1), currently hosting a large share of DPs who could potentially return back to municipalities / villages east of it. As shown in Figure 7, large areas of groundwater, which are already low (Figure 5) are already polluted (north west). Untreated waste water is now flowing from Jaramana and Aqraba in the west to the east. As water from the Barada river is decreasing / not available, people mostly depend on wells (that are still relatively clean) for both drinking and agriculture purpose. It is crucial to protect these clean sources and find alternative water sources, such as from treated wastewater. A large share of the assets, including trees / crops is damaged in the area east of Jaramana. Therefore, there is an opportunity redevelop with sustainable / climate change resilient crops.
36. A target area, consisting of 9 municipalities / villages has been selected to address climate change related water issues through concrete adaptation actions. This area has been selected because of relatively: 1) high exposure to less rain and more droughts, 2) high population density and high share of DPs and returnees, high share of agriculture land, high share damaged assets and risk of pollution of water resources from untreated wastewater, low groundwater level (Figure 5), all affecting water supply for agriculture and drinking purposed. Poverty has not been a critical selection criterion because almost the whole area is defines as very poor.



**Figure 5: Groundwater availability in target area**

37. Reducing poverty in a sustainable manner requires support to Syrians in general, but specifically DPs / returnees (see potential number of returnees in Table 1), in regaining their livelihoods, especially in the agriculture sector in Eastern Ghouta. In focusing livelihoods security, special attention should be paid to the empowerment of women as many of them are now heading their households after losing husbands or fathers to the war and of whom many already work in the agriculture sector (see Table 1 below and Gender Annex). Special attention will also be given to youth, who are particularly vulnerable and crucial for effective longer-term economic development.<sup>19</sup>

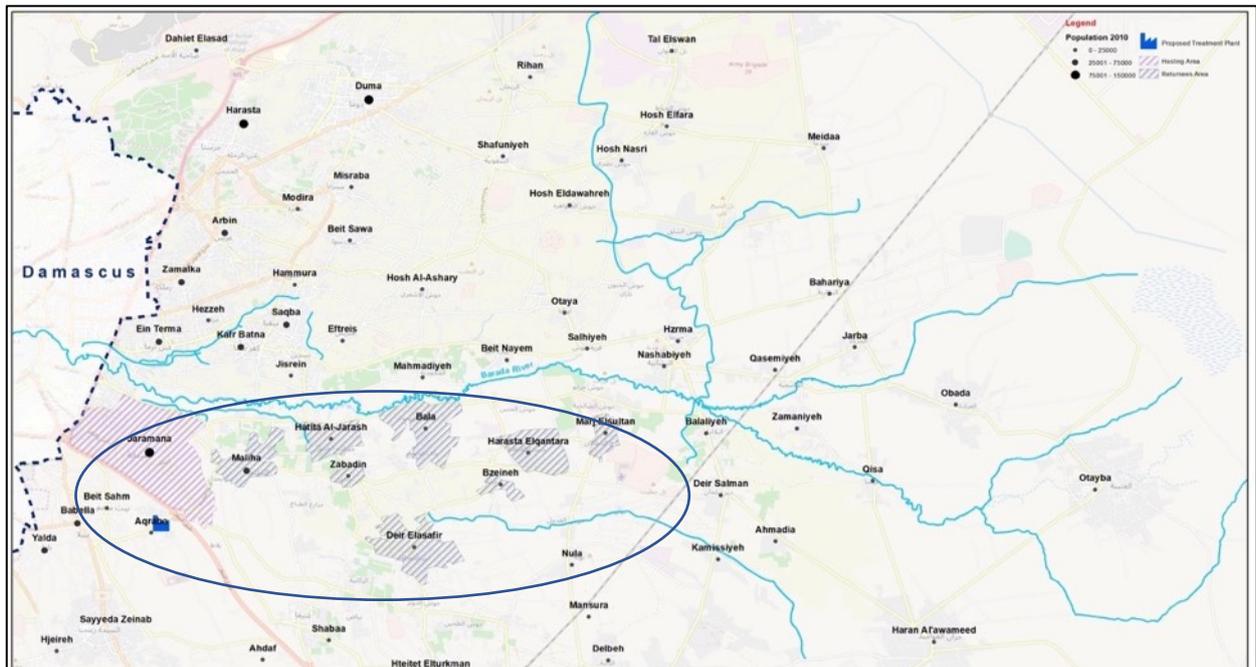


Figure 6: Target municipalities (shown in circle).

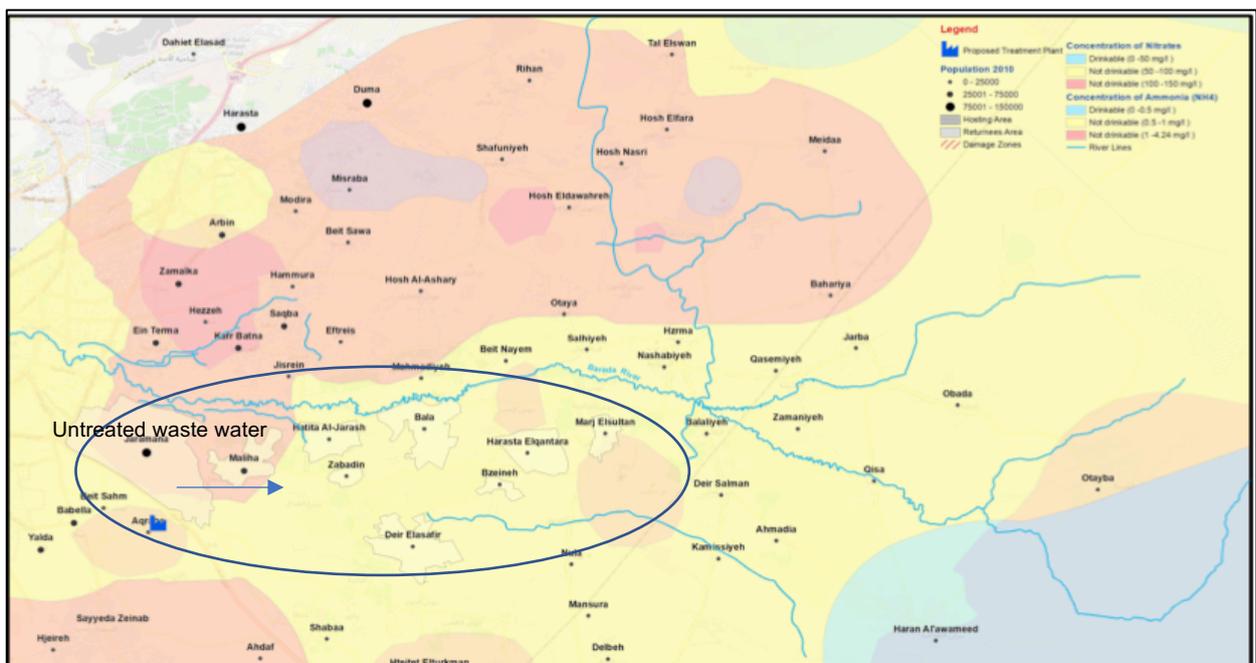


Figure 7: Groundwater and pollution movement in target area

<sup>19</sup> UN Syria common assessment on country situation (2018)

**Table 1: Climate change vulnerability assessment overview of target municipalities in Eastern Ghouta**

The population in target areas in 2018 versus in 2010 shows potential number of returnees. Share of women working in agriculture in shown in last table. Numbers for 2018 are estimations based on inputs from Mayors. (Based on data and MoLAE workshops and consultations).

Target Municipality	Population / beneficiaries popl 2010: [reference from CBS Syria] pop l 2018: [Estimated from MOLAE]		Main climate change hazards / issues (exposure)	Underlying vulnerability (sensitivity)			Effects on communities (impacts)					Barriers to adapt (adaptive capacity)				
	2010	2018		1. Less rain 2. Warmer 3. Drought 4. Other	<b>Population:</b> 1. Density 2. Expected returnees 3. Poverty 4. Share labour agri / livestock 5. Share DPs	<b>Natural</b> 1. Soil erosion 2. Vegetation degradation 3. Agriculture density (land use) 4. Livestock density (land use) 5. Salination and desertification	<b>Human made</b> 1. Urban extend 2. Pollution (water) 3. Cultural heritage 4. Damaged water supply 5. Damaged sewerage 6. Damages irrigation, 7. damaged waste water treatment	<b>Water</b> 1. Less stream flow 2. less groundwater	<b>Human settlement</b> 1. less water for urban / domestic use	<b>People</b> 1. less clean / drinking water	<b>Agriculture</b> 1. Crop failure; 2. not enough water for livestock	<b>Knowledge and awareness</b> (Lack of climate and water related)	<b>Technology (Lack of)</b> 1. Irrigation 2. Waste water treatment 3. Sustain-able drinking water	<b>Institutional capacity (Lack of)</b> 1.governance / planning 2. crisis impact	<b>Services / infra (lack of)</b> 1. Cover-age; 2. environmental performance	<b>Economic / financial resources</b> 1. Dependence on single income source
<b>Jaramana</b>	700000	1,300,000	Less rain drought	Highest pop density + DPs + returnees	high concentration of polluted soil	urban extended: High water demand and sewage failure effects	Barada seasonal flow (60 days)	less urban / drinking water	less clean / drinking water			lack of waste water treatment	governance -planning	coverage: Environmental performance		
<b>Maliha (mun)</b>	60,000	10,000	less rain drought of wells	expected returnees :30000 per year agricultural - livestock labor 35% *1	High vegetation degradation Concentration of polluted soil	damaged sewerage-damage irrigation	Barada seasonal flow (60 days) : less ground water	less water for domestic use	less clean / drinking water	crop failure livestock failure (less water irrigation)	lack of water supply	lack of waste water treatment	planning and crisis impact	coverage: Environmental performance	35%farmers	returnees -
<b>Hatita Al-Jarash/village related to zabdine</b>	2300	1150	drought	agricultural - livestock *2	vegetation degradation	damages irrigation*	Barada seasonal flow (60 days) : reduced spring water flow:2 springs out of 5 are dry			crop failure	lack of water supply	lack of irrigation	planning	coverage: Environmental performance	dependenc e on farming	35%women work in farming
<b>zabdine (mun)</b>	10380	4100 inh	drought	agricultural - livestock	vegetation degradation	damages irrigation	Barada seasonal flow (60 days)			crop failure dessicated fruit trees	lack of water supply	lack of irrigation	planning	coverage: Environmental performance	dependenc e on farming	35%women work in farming
<b>Deir Elsafir (mun)</b>	16000	13500 inh	drought	agricultural labor 80% of inhabitants *	vegetation degradation desertification	damages of irrigation	Barada seasonal flow (60 days): less ground water	less water for domestic and drinking		not enough water for livestock and agriculture	lack of awerness and water supply	lack of water management	planning and	coverage: Environmental performance	dependenc e on farming	605women work with farms and livestock
<b>Harasa Elqantara/village related to Marj al sultan</b>	1500	500	drought	agricultural labor75%	vegetation degradation desertification	damages irrigation	Barada seasonal flow (60 days): less ground water	less water for drinking	less clean /drinking water	not enough water for livestock and agriculture	lack of climate adaptation respond	sustainable drinking water-lack of modern irrigation	planning	coverage: Environmental performance	dependenc e on farming	5% women work in farming
<b>Bzeineh/ villagerelated to Marj al sultan</b>	6000	2000	less rain and drought	agricultural labor 80%	vegetation degradation desertification	damages irrigation- water supply	Barada seasonal flow (60 days): less ground water	less drinking water		not enough water for livestock and agriculture	lack of climate adaptation respond	sustainable drinking water-lack of modern irrigation	planning	coverage: Environmental performance	dependenc e on farming	5% women work in farming
<b>Marj Elsultan (mun)</b>	5000	1500	less rain less ground water	returnees	agriculyral density	damaged water supply	reduce water in 5 wells are : less groundwater	less water for domestic	less clean /drinking water	not enough water for domestic	damages of the water network	sustainable drinking water - treatment station is out	crisis impact	coverage: Environmental performance	30% farmers - 70% other	70% women work other than farming

## *Problem Statement*

38. The problem to be addressed by the proposed project is that the livelihoods of communities and farmers in the Eastern Ghouta area of Syria are being negatively affected by climate change. Rising temperatures, falling rainfall and more frequent extreme events are resulting in: i) reduced availability of water (both surface and groundwater); ii) failure of crops; and iii) increased vulnerability to pollution. These effects are greatly exacerbated by the baseline situation of unsustainable management of land and water resources in Syria and impacts of the crisis. Future prospects for rural communities in Eastern Ghouta are jeopardised, with their livelihoods expected to be further threatened as climate change impacts intensify, making sustainable management of their natural resources increasingly challenging.

### **Possibilities for Syria to handle climate change-related challenges**

39. Sustainable water management is a key issue to address in Syria in order to build up climate change resilience, to support sustainable development, to enhance social cohesion and to improve people's livelihoods and well-being.
40. In line with Syria's INDC (2019), key concrete adaptation needs / priorities concerning water include:
- The protection of water resources (and prevent contamination of surface and groundwater resources / wells)
  - The reduction of water losses;
  - The increase of water use efficiency, supporting water harvesting projects and using high efficiency irrigation methods;
  - The promotion of use of non-conventional water resources (e.g. treated wastewater); and
  - Improved agricultural production practices (e.g. drought tolerant crops).
41. According to the INDC, this should also be established through: 'Building capacity, expertise and competencies, raising awareness and developing sustainable awareness about adapting to climate change, establishing a participatory approach among residents of affected areas, and enhancing the role of local communities in the formulation and implementation of development programs.'

There are several institutions concerned with water resources, management and water supply. The Ministry of Water Resources manage all water resources in the country in terms of conducting policies, research and studies related to water resources, as well as Planning, construction and operation of various water installations (dams, irrigation channels and pumping stations). The implementation of the projects at the governorate level is monitored through the Directorate of Water Resources in each governorate and following to the General Authority for Water Resources. In order to execute the agricultural plans set up by the Ministry of Agriculture and Agrarian Reform and meet the needs of administrative units in accordance with national plans that are supervised by the Ministry of Local Administration and Environment. The sustainable management and development of water resources requires a practical plan for coordination among the various stakeholders. Therefore, IWRM should be applied as a framework for regional planning in water basins in Syria.

42. Water resources is to be managed more sustainably including the application of existing knowledge and experience. The available renewable water resources need to be better shared for domestic, agricultural, and industrial use with a priority for respecting internationally defined minimum standards for domestic use. The objective should be to support the economic potential of Syria and vulnerable groups for the coming decades and beyond for future generations, taking into account climate change impacts.

43. Addressing climate change-related water and post-crises challenges requires a combination of immediate response to people's basic needs combined with a longer-term approach aimed at building resilience to climate change, shocks and protracted crises, as per a three-tier approach (Table 2).
44. The restoration of access to (clean) water and basic services should be a priority, combined with water availability for agriculture. which is important as it provides for people's livelihoods, especially since a 'broken' system of wastewater reuse has polluted some areas. Investment in innovative policies and practices is also pivotal as research, technology development and transfer can provide further improvements to water efficiency and agriculture productivity (also considering the water-food-energy nexus).<sup>20</sup>

**Table 2: Project three-tier approach**

Three-tier approach	Relevant for project target area
a) <b>Immediate:</b> local rehabilitation measures (concrete interventions). The focus should be on urgent issues of functionality to assist people to have access to clean water and regain their livelihoods. Design should be durable / sustainable and climate change resilient.	<ul style="list-style-type: none"> <li>Urgent restoration of functionality of assets and systems in target communities, aiming to provide clean drinking water, reduce wastewater pollution and regain agricultural livelihoods</li> </ul>
b) <b>3-5 year-perspective:</b> Identify and initiate projects to develop and (re)construct infrastructure and water -related services integrating local and basin-wide concepts by linking the existing situation in communities and cities to a long-term vision of climate change resilient water management.	<ul style="list-style-type: none"> <li>Participatory assessment of water supply and demand needs in target areas, directing integrated and participatory water resource planning and management linked to watershed- and river-basin-wide considerations, taking into account climate change induced factors and crisis impact factors</li> </ul>
c) <b>10-year perspective:</b> Re-defining and implementing Syria's National Water Strategy, spatial strategies and a National Adaptation Plan. The objective is to create enabling conditions for implementation of an Integrated Water Resources Management (IWRM), taking into account climate change effects and fragility challenges	<ul style="list-style-type: none"> <li>Support development and implementation of a national framework, replicating assessment, planning- and management approaches and techniques used in the 3- to 5-year process (through recommendations)</li> </ul>

## *Solution and Barriers*

### **Preferred Solution**

45. The preferred solution would be for the communities/farmers within the Eastern Ghouta Governate of Syria to become resilient to climate change impacts. This would be achieved by developing, then implementing a climate-resilient integrated natural resource management strategy for Eastern Ghouta. Such a strategy would promote a wide range of new approaches, including: i) long-term planning at the river basin/catchment scale, informed by integrated catchment management principles; ii) explicit consideration of the trends, risks and impacts of extreme climatic events and their interactions in catchments of various scales; iii) consideration of all landscapes (ie urban, agricultural, forest, as well as conservation areas) within Eastern Ghouta; iv) the use of innovative technologies; v) diversification of water sources, including the use of non-traditional sources.
46. A project theory of change table has been included in annex 1

### **Barriers**

47. Barriers to implementation of the above solution within Syria include:
- Lack of coherent climate risk information coupled with limited knowledge sharing within the country;

<sup>20</sup> FAO and WB (2018) water management in fragile systems. Building resilience to shocks and protracted crisis in the Middle east and North Africa. Discussion paper. Online: <http://www.fao.org/3/i7902EN/i7902en.pdf>

- Weak institutional structures for developing integrated catchment management strategies;
- Limited technical capacity of public services to promote climate change adaptation among communities;
- Limited community experience in participation in assessment, planning and development of catchment plans;
- Limited knowledge among communities of the benefits water conserving agricultural technology, pollution prevention and non-traditional water sources.

## Project / Programme Objectives:

### Overall objective

48. Enhance the climate change resilience of communities in Eastern Ghouta in Rural Damascus Governorate through sustainable and climate change resilient integrated natural resources management.

### Sub-objectives

49. The sub-objectives are:

- Enhance the capacity of national and sub-national government institutions, communities and vulnerable groups to assess, plan and manage climate change-induced and post-crises issues (especially water scarcity and related water dependent livelihoods) in a sustainable and climate resilient way (In line with AF outcomes 1, 2 and 3).
- Support the development and implementation of national framework to replicate the assessment, planning and management approach and innovative techniques used (in the 3- to 5-year process), including collection and sharing of lessons (in line with AF outcome 7).
- Increase access to (i.e. restoration and development) municipal and community-level sustainable and climate change resilient water supply systems for urban and agriculture purposes, using innovative and replicable techniques (in line with AF outcome 4)
- Increase resilience of water-dependent livelihoods and related income, especially for vulnerable groups, as well as identify and promote alternate (non-water dependent) livelihoods (in line with AF outcome 6).

## Project / Programme Components and Financing

**Table 3: Project components and financing**

Project/Programme Components	Expected Outputs	Expected Outcomes	Amount (US\$)
Component 1 – Integrated urban – rural Natural Resource including water and land Management to cope with climate change	Output 1.1 Strengthen institutions at national, sub-national and community levels for: - INRMP approach - Assessment and planning for climate change resilience and environmental security	1.1. Community and government awareness and capacity increased to conduct assessment and planning processes required for INRMP and climate change resilience including integration of water and land management to meet urban-rural natural resource needs (in line with AF outcomes 1 and 2)	Total \$1,540,000

	Output 1.2 INRMPs and climate change resilience priority action plans, including O & M plan developed for Eastern Ghouta watershed/governorate (+ 8 x municipal in context of target area and watershed)	1.2 INRMPs and climate change resilience priority action plans, including O & M plans developed through a participatory process (in line with AF outcomes 1 and 2)	
	Output 1.3 National Framework for replicating INRMP approach established as well as for replicating climate change resilience assessment and planning approaches and use of innovative techniques	1.3 Strengthened National capacity to replicate the approach in other areas, to capturing and share lessons and to integrate these in policies and regulations (in line with AF outcome 7).	
Component 2 - Increase access to climate change resilient water supply systems for urban and agriculture purposes (i.e. avoid / minimize waste of water)	Output 2.1 Measures to use non-conventional water resources identified and applied, incl. mobile wastewater treatment plants (or other measures to reduce contamination / pollution of water (i.e. waste of water) and use treated water for irrigation demonstrated + O&M plan developed	2.1 Increased resilience to municipal / community identified water scarcity issues and adaptation needs (through use of non-conventional water resources instead of (polluted) groundwater (in line with AF outcome 1 and 4)	Total \$4,601,014
	Output 2.2 Leakage risk assessed and prioritised. Key risk areas rehabilitated + O&M plan developed.	2.2 Increased resilience to municipal / community identified water scarcity issues and adaptation needs (through reduction losses / leakages of drinking- and waste water from canals / irrigation systems (in line with AF outcome 1 and 4)	
	Output 2.3 Mapping of wastewater network risks, rehabilitation of key areas + O&M plan developed.	2.3 Increased resilience to municipal / community identified water scarcity issues and adaptation needs (through efficient water management (by protected water sources from pollution and preventing contamination by waste water) (in line with AF outcome 1 and 4)	
Component 3 - Increase resilience of water-dependent livelihoods and security of income for vulnerable groups	Output 3.1 Introduction of water efficient agricultural technology	3.1 Water efficient irrigation systems introduced. (in line with AF outcome 4 and 6.	Total \$2,200,000
	Output 3.2 Adoption of climate resilient agricultural practices	3.2 Drought tolerant crops and livestock promoted. Conservation agriculture and permaculture introduced. Farmer extension services more	

		effective. (in line with AF outcome 3, 4, and 6.	
	Output 3.3 Promote alternate non-water dependent livelihoods	3.3 Suitable alternate livelihoods identified and promoted. Community awareness of options raised. AF outcome 3 and 6	
4. Total components			\$8,341,014
5. Project / Programme Execution cost			\$875,900
6. Total Project/Programme Cost			\$9,216,590
7. Project / Programme Cycle Management Fee charged by the Implementing Entity			\$783,410
<b>Amount of Financing Requested</b>			10 million

## Projected Calendar

Milestones	Expected Dates
Start of Project/Programme Implementation	November 2020
Mid-term Review (if planned)	March 2023
Project/Programme Closing	March 2025
Terminal Evaluation	February 2025

## PART II: PROJECT / PROGRAMME JUSTIFICATION

### A. Project / programme components

50. To achieve the overall project objective, 'Enhance the climate change resilience of communities in Eastern Ghouta in Rural Damascus Governorate through sustainable and climate change resilient integrated natural resources management, including integration of water and land management to meet urban-rural natural resource needs,' the project will focus on concrete adaptation actions in the target area with supporting measures to operate and sustain these actions and replicate them elsewhere. Horizontal and vertical cooperation between national and sub-national government institutions, communities and vulnerable groups will be promoted to address climate change and watershed management challenges. In line with this, capacity will be strengthened to increase climate change resilience in the water sector, including water dependent livelihoods, also taking into account (post) crisis needs.
51. Table 4 summarises the national water resource management adaptation needs / priorities (to respond to increasing temperatures and droughts / less rain, resulting in water scarcity issues), possible adaptation measures and initial selection by mayors per target towns / settlements (identified and confirmed through data and consultations with mayors in bold). For possible techniques see Annex 2, including related costs, maintenance needs and best practice examples
52. Technically, efficient, equitable sustainable and climate change resilient water supply systems (see overview of options in Annex 2) will be developed for urban and agriculture use and agriculture production support, including mobile / flexible wastewater treatment systems that can be installed quickly to respond to urgent issues in the future. The introduction of a process for adaptation related assessment, planning and decision-making as a tool to enhance social cohesion is new, relevant and timely in the case of Syria. Also, the approach to comprehensively assess, plan and manage water systems, considering urban–rural linkages, through e.g. the promotion of treated wastewater for agriculture and separating water for drinking purposes and other purposes can be regarded as innovative in the context of Syria.
53. The objectives of the proposal are in line with national priorities (refer

54. Table 7), especially the 2019 INDC, and Adaptation Fund outcome areas, which resulted in the following components:

### **Component 1: Integrated Natural Resource Management to cope with climate change**

55. This component is focussed on capacity building, engagement, undertaking technical assessments of watersheds, ensuring that regulations and legislation support integrated natural resource plans, developing integrated natural resource management plans including integration of water and land management to meet urban-rural natural resource needs, through a participatory process and capturing and managing information and lessons learned to allow for replication nationally. The component also focuses on institutional and community capacity strengthening to assess and plan for climate change resilience and environmental security.

56. There are three outputs:

- Output 1.1 Strengthen institutions at national, sub-national and community levels for INRMP approach and assessment and planning for climate change resilience and environmental security. This output will focus on strengthening capacities to assess, plan and manage water by looking at water systems and related supply and demand trends and projections, taking into account climate change and demographic and urban development. This will require coordination between different governorates and districts at different levels and to include communities and vulnerable groups in assessment, planning and decision-making processes. It is envisioned that this participative 'management' of scarce water resources is also important to enhance social cohesion. The activities envisaged for this output include:
  - 1.1.1 Community and government engagement and awareness raising to facilitate a participatory process
  - 1.1.2 Capacity building - series of workshops / trainings to assess the area and develop regional and community prioritized action plans
  - 1.1.3 Strengthening the Climate Change Adaptation Unit at the Directorate of Atmospheric Safety / Central Administration - Ministry of Local Administration and Environment, to monitor project implementation and submit periodic reports on project in coordination with representatives of relevant directorates that will be involved in the work.
- Output 1.2 Develop INRMPs and climate change resilience priority action plans, including O & M plans for Eastern Ghouta watershed/governorate (8 x municipal in context of target area and watershed). Under this output, integrated natural resource management plans, that take a watershed view, will be developed, as well as climate change resilience priority action plans, through a participatory process that involves national and local government as well as civil society. The INRMPs will provide a framework for the integration of water and land management to meet urban-rural natural resource needs.
- Four activities are proposed:
  - 1.2.1 Community and government engagement, awareness raising and capacity building to facilitate a participatory and integrated assessments, planning and decision-making process
  - 1.2.2 Technical assessment of watersheds (water availability, irrigation systems, conservation triggers etc) + water needs, also considering climate change and urban development
  - 1.2.3 Climate change resilience priority action plans, including O & M plans
  - 1.2.4 Development of INRMPs through community and government participatory process, including integration of water and land management to meet urban-rural natural resource needs.
- Output 1.3 National Framework for replicating watershed-based INRMP approach as well as for replicating climate change resilience assessment and planning approaches and innovative techniques. This output will focus on strengthening the National capacity to replicate the

approach in other areas, to capturing and share lessons and to integrate these in policies and regulations. This will be done by supporting the development of a national framework to replicate the model and techniques and approaches used in the project. It consists of two activities:

- 1.3.1 Develop and implement information management system for collection of lessons learned in the field of INRMP and climate change resilience approaches and innovative techniques (with support of national climate change / environmental observatory / monitoring unit)
- 1.3.2 Development of a national framework for replicating watershed-based INRMP.

**Component 2: Increase access to climate change resilient water supply systems for urban and agriculture purposes (i.e. avoid / minimize waste of water)**

57. This Component will focus on increasing access to (i.e. restoration and development) municipal and community-level sustainable and climate change resilient water supply systems for urban and agriculture purposes, using innovative and replicable techniques (see options in Annex 2).

58. In line with AF outcomes 4 and Government priorities (see section D), this component will focus on demonstrating what sustainable and climate change resilient water supply systems at community level are feasible in the Syrian context in terms of costs and technique (and social and environmental benefits and impacts), and which can therefore be replicated elsewhere in the country. This is important because most of the (pre-crisis) practices are not modern climate change resilient. Moreover, there is an urgent need to identify suitable solutions for the crisis recovery phase.

59. Component 2 will consist of the following outputs and activities:

- Output 2.1 Measures to use non-conventional water resources identified and applied.
  - 2.1.1 Demonstrate use of mobile wastewater plants or other techniques suitable to treat and reuse wastewater
  - 2.1.2 Use treated water for agriculture through connection of irrigation systems (see Component 3) to treated water (and reduce demand on groundwater resources)
- Output 2.2 Leakage risk assessed and prioritised. Key risk areas rehabilitated, and O&M plans developed.
  - 2.2.1 Leakage risk assessment of water supply systems and prioritisation
  - 2.2.2 Rehabilitate key risk areas
  - 2.2.3 Develop long-term rehabilitation/O&M program for canal/irrigation systems
- Output 2.3 Mapping of wastewater network risks, rehabilitation of key areas
  - 2.3.1 Mapping of wastewater network from hazard perspective
  - 2.3.2 Rehabilitation of key risk areas of wastewater networks
  - 2.3.3 Develop programme for ongoing rehabilitation/O&M
  - 2.3.4 Demonstration of low-cost village level drinking water treatment units

**Component 3: Increase resilience of water-dependent livelihoods and security of income for vulnerable groups**

60. Component 3 focuses on livelihoods, particularly increasing the resilience of water-dependent livelihoods and security of income for vulnerable groups. The activities under this component will help to reduce demand on both surface and groundwater resources through rainwater harvesting, introduction of water efficient technologies and agricultural practices, promotion of drought tolerant crops and livestock, and promoting non-water dependent livelihoods

61. Table 4 below provides an overview of possible concrete adaptation actions per municipality in Eastern Ghouta (initially identified by ministries, governorates, mayors and farmer representatives. Annex 2 provides an overview innovative technique example. During the full proposal development phase, actions will be selected and detailed based on inputs from the

government, municipalities, vulnerable groups, NGOs, etc. DPs, returnees, women and youth will be particularly targeted as beneficiaries

62. This component will consist of the following outputs:

- Output 3.1 Introduction of water efficient agricultural technology
  - 3.1.1 Introduction of rainwater harvesting and on-farm storage
  - 3.1.2 Introduce water efficient irrigation systems eg Drip/micro irrigation/wicking beds
  - 3.1.3 Promote use of drought tolerant livestock
- Output 3.2 Adoption of climate resilient agricultural practices
  - 3.2.1 Introduction/expansion of drought tolerant crops / seeds / seedlings (+ provide training at needed time i.e. before planting, during growing harvesting, etc. and improve early warning actions to provide farmers the information needed to cope with severe climate events (drought, floods...etc)
  - 3.2.2 Promote conservation agricultural techniques
  - 3.2.3 Increase accessibility and effectiveness of extension services to farmers
  - 3.2.4 Introduction/encouragement of permaculture
- Output 3.3 Promote alternate non-water dependent livelihoods
  - 3.3.1 Identification of suitable alternate livelihoods
  - 3.3.2 Awareness raising and capacity building

**Table 4: National water resource management adaptation needs / priorities**

Municipality		Relevant water resource management adaptation needs (in line with national priorities - INDC)								Other adaptation needs	
		Protect water resources (and prevent contamination of surface and groundwater resources / wells)	Reduce water losses, reduce water leakage from canals		Raising water use efficiency, supporting water harvesting projects and using high efficiency irrigation methods		Promote the use of non-conventional water resources (treated wastewater); pilot treatment plants for villages, spatial treatment plants for small communities and water production		Improved agricultural practices (changing sowing dates, drought tolerant crops, conservation agriculture, extension and rural extension services)	Alternative or diversified livelihoods; awareness raising, capacity building; etc.	
Relevant adaptation measures Identified / confirmed per municipality (by mayors)		<ul style="list-style-type: none"> <li>- <b>Integrated water resource management</b></li> <li>- Spatial planning strategies</li> <li>- Regulations</li> <li>- Permaculture (to reduce pollution from livestock)</li> <li>- <b>See wastewater treatment</b></li> </ul>	<ul style="list-style-type: none"> <li>- <b>Rehabilitate wastewater network (connection under waste water treatment)</b></li> </ul>		<ul style="list-style-type: none"> <li>- <b>Drip / micro irrigation, subsurface</b></li> <li>- Rainwater harvesting from roofs public building;</li> <li>- <b>Rain or stream water harvesting + storage at farms</b></li> </ul>		<ul style="list-style-type: none"> <li>- <b>Mobile wastewater treatment plants (+ connections) to stop pollution downstream (urgent issues) and enable use of treated water for agriculture (reducing pressure on other sources)</b></li> </ul>		<ul style="list-style-type: none"> <li>- <b>Drought tolerant crops / trees</b></li> <li>- Permaculture (also for livestock)</li> </ul>	<ul style="list-style-type: none"> <li>- <b>Water user associations / women / youth cooperation</b></li> <li>- Alternative livelihoods</li> <li>- <b>Livelihood skills building</b></li> </ul>	
Resilience building outcomes		<b>Increased resilience to water scarcity issues through diversity of water sources and efficient water management</b>		<b>Municipal / community increased resilience to water scarcity issues (esp. droughts) through reduction of drinking water and waste water losses</b>		<b>Farmers and consumers dependent on food production increased resilience to water scarcity issues (esp. droughts) through water use efficiency and harvesting</b>		<b>Municipal / community / farmers increased resilience to water scarcity issues (esp. droughts) and environmental pollution through use of non-conventional water resources</b>		<b>Farmers and consumers dependent on food production increased resilience to water scarcity issues (esp. droughts) through improved agriculture practices</b>	<b>Increased resilience of women, youth to livelihoods that depends on water and are thus affected by water scarcity issues (esp. droughts)</b>
		Drinking / domestic	Agriculture	urban / domestic	Agriculture	urban / domestic	Agriculture	urban / domestic	Agriculture		
Town / city	Settlements										
Jaramana											
Maliha											
Zebdeen	Hatita Al-Jarash										
Deir Elasafir	Housh Doier, Rekabieh and Sahia										
Marj Elsultan	Bzieneh, Harasta Elqantara, Bala and Noieleh										

## B. Project / programme provides economic, social and environmental benefits

63. The proposed project aims to maximize benefits to the most vulnerable groups, including DPs / returnees, women and youth, and to avoid as best as possible any negative environmental and social impacts. During the full project development phase, 'complete' disaggregated population data will be provided and consultations with all relevant groups conducted to identify specific needs and possible concerns related to the proposed interventions. An annex showing how the project and all proposed activities comply with the AF environmental and social and gender policy will be included in the full proposal. In general, possible negative impacts are avoided / mitigated through participatory assessment, planning and decision-making processes, also during project preparation, where different groups can express specific needs and possible concerns. Also, water user associations and / or cooperations, targeting specifically women, etc. will be established / improved. Moreover, various stakeholders have been consulted (see consultation section) to identify potential project risks and how these could be avoided / mitigated.
64. The project will target all of the inhabitants of the target municipalities. However, the project will not target all inhabitants in Jaramana; instead it will target the potential returnees to the municipalities east of it and direct beneficiaries of wastewater treatment interventions in Jaramana. The proposed adaptation measures will benefit all inhabitants. However, specific needs of DPs / returnees, farmers and women and youth will be especially taken into account. As shown in Table 1, the current number of inhabitants of the target municipalities, except Jaramana, is around 32,000 but could grow to over 100,000 with returnees.

**Table 5: Economic, Social and Environmental benefits**

Type of benefit	Baseline	With/after project
Economic	Climate change is already leading to economic and livelihood losses, especially caused by less rain, droughts and water evaporation. Water dependent livelihoods, especially in the agriculture sector, are especially threatened.	<ul style="list-style-type: none"> <li>The government, at different levels, will be able to better assess, plan and manage scarce water resources, which are also of economic importance</li> <li>The agriculture sector in target areas will be more climate change / drought resilient, leading to improved livelihood security, benefitting especially DPs / returnees, women and youth with more secure / higher income.</li> <li>Sustainable solutions implemented will avoid future costs.</li> </ul>
Social	Climate change is already leading to negative social impacts, especially caused by less rain, droughts and water evaporation, leading to rural – urban migration,	<ul style="list-style-type: none"> <li>The government, at different levels, will be able to better assess, plan and manage scarce water resources, also with the purpose to enhance social cohesion (i.e. avoid / reduce tension) over scarce water resources.</li> <li>Participative assessment, planning and decision-making processes over scarce water resources, also involving DPs / returnees, women and youth, will enhance social cohesion over scarce water resources.</li> <li>Climate change resilient livelihood skills building activities, including to operate and sustain these + resilient water supply systems, will benefit the most vulnerable, including DPs / returnees, women and youth</li> <li>Improved or new climate resilient and sustainable water systems will contribute to social well-being.</li> </ul>
Environmental	Climate change is already leading to negative environmental impacts, especially land / soil degradation and desertification and overexploitation of resources. Moreover, due to the crisis, untreated wastewater is increasingly polluting water resources	<ul style="list-style-type: none"> <li>The government, at different levels, will be able to better assess, plan and manage scarce water resources, also considering environmental sustainability</li> <li>Water resources such as wells, and water dependent livelihoods (i.e. agriculture) will be protected from pollution through above and wastewater treatment. This will mostly benefit the most vulnerable/poor groups dependent on these resources, including DPs / returnees, women and youth.</li> </ul>

\*During the full proposal development phase, all benefits per output will be defined

## C. Cost-effectiveness of the proposed project / programme

65. All below proposed actions aim to reduce water demand while enhancing sustainable supply together (i.e. as a package). The assessment, planning and management of water resources in an integrated / holistic manner is required not only to increase water use efficiency, but also to plan for actions such as below in areas other than the project target area. Detailed costs per action / project activity will be provided during the full proposal phase, including cost effectiveness (cost per person). An overview of relevant technical solutions, including cost estimates, is provided in Annex 2. During the full proposal development phase, cost-effectiveness of each proposed project activity will be analysed in a quantitative matter, including more detailed comparison with alternative activities.

**Table 6: Proposed adaptation actions' cost-effectiveness rationale**

Proposed adaptation actions	Alternative actions and rationale why priority actions have been selected from a cost-effectiveness perspective
<p>Protect water resources (and prevent contamination of surface and groundwater resources / wells)</p> <ul style="list-style-type: none"> <li><b>Regional Integrated water resource management</b></li> </ul>	<p>A regional approach to integrated water resource management is required to plan and manage water resources efficiently by looking at the whole system and future trends and projections (including for implementation of actions such as below)</p> <p>Alternatively, water is managed at the national level or per municipality, neighbourhood or well (ie not by catchment), which could result in unsustainable / inefficient practices because the 'whole' system is not taken into account.</p>
<p>Reduce water losses, reduce water leakage from canals, and maintain soil moisture</p> <ul style="list-style-type: none"> <li><b>Rehabilitate key risk areas of wastewater network</b></li> <li><b>Increase efficiency of water network (map condition, identify key risk areas, rehabilitation and O&amp;M plan</b></li> </ul>	<p>Rehabilitation of wastewater networks is required to reduce pollution / connect it to wastewater treatment plants to allow beneficial reuse.</p> <p>Water networks are currently damaged and water losses significant. Furthermore, as a result of mixed networks, water suitable for drinking is being used for agriculture. These measures are cost-effective because they will reduce wasting/misusing already scarce water</p> <p>Alternatively, conventional water supply methods are used, such as drilling of more wells. However, this would lead to unsustainable water use and would not avoid these wells being polluted and groundwater being overexploited, leading to more costs on the long run.</p>
<p>Promote the use of non-conventional water resources (treated wastewater); pilot treatment plants for villages, spatial treatment plants for small communities and water production</p> <ul style="list-style-type: none"> <li><b>Mobile wastewater treatment plants (+ irrigation connections) upstream to stop pollution downstream (urgent issues) and use treated water for agriculture</b></li> </ul>	<p>Mobile wastewater treatment plants + irrigation connections are required to enable beneficial reuse of wastewater and to reduce pollution of groundwater and agriculture lands. Irrigation connections are required to make optimal use of treated water in a water scarce environment.</p> <p>Although wastewater treatment plans are more expensive than conventional water supply measures (see above), treating waste water is the only way to enable wastewater to be recycled, to reduce pollution and avoid further destruction of farm land. Therefore, it is a more cost-effective long-term solution</p>
<p>Raising water use efficiency, supporting water harvesting projects and using high efficiency irrigation methods</p> <ul style="list-style-type: none"> <li><b>Drip system (or Goasis approach– see Annex 2)</b></li> <li><b>Rain or stream water harvesting + storage at farms</b></li> </ul>	<p>Drip systems, the most water efficient irrigation systems (reduce from 75% against overhead irrigation), or e.g. Growboxxes / Waterboxxes (see Annex 2) are required to increase water use efficiency in the most water consuming agriculture sector. Rain or stream water harvesting at farms is required to collect clean water becoming available (and to use it for irrigation). Collection at farms is suitable because of availability of space and direct use options.</p> <p>Using water more efficiently is cost-effective compared to alternative conventional water supply measures (see above)</p>
<p>Improved agricultural practices (changing sowing dates, drought tolerant crops, conservation agriculture, extension and rural extension services</p> <ul style="list-style-type: none"> <li><b>Drought tolerant crops / trees</b></li> </ul>	<p>Drought tolerant crops are required to reduce unnecessary water consumption in a water scarce area, especially with more frequent droughts. Moreover, the (post)crisis situation allows for applying the building (or growing) back better principles, since a large share of the crops / trees has been destroyed. Improved agricultural technology and techniques will further reduce water usage.</p> <p>Alternatively, existing farming practices are continued and more water supply will be required, however supply already over-exploited.</p>

<ul style="list-style-type: none"> <li>• <b>Water efficient irrigation systems</b></li> <li>• <b>Climate resilient agricultural practices</b></li> </ul>	
<p>Alternative or diversified livelihoods; awareness raising, capacity building; etc</p> <ul style="list-style-type: none"> <li>• <b>Water user associations / women / youth cooperation</b></li> <li>• <b>Livelihood skills building</b></li> </ul>	<p>Water user associations / women / youth cooperation are required for vulnerable groups to improve social ties and better organize groups for bargaining / negotiation purposes. Livelihood skills building activities are required to ensure new or improved systems are operated and sustained properly.</p> <p>Alternatively, activities are less sustainable and may not fully benefit the most vulnerable because of a lack of above.</p>

66. Altogether, the project will be cost-effective by:

- Avoiding future costs associated with damage and loss due to climate change impacts (especially droughts) and to ensure the interventions are sustainable;
- Efficient project operations because of 'in-house' technical support options and capacity building expertise and because of direct partnering with communities (thereby building their capacity as well as reducing costs);
- Community involvement with development/construction of concrete interventions and because of community capacity building
- Selected technical options based on cost-feasibility and resilience/sustainability criteria (assessment to be done during full proposal)

#### **D. Project consistency with national or sub-national sustainable development strategies**

67. The Syrian Arab Republic ratified the United Nations Framework Convention on Climate Change in 1995, acceded to the Kyoto Protocol of 2006 and ratified the Paris Agreement on Climate Change (13 November 2017). Syria submitted its first national communication to the United Nations Framework Convention on Climate Change in 2010. Syria also submitted the initial document for nationally identified contributions at the end of 2018. The project especially supports SDG goals 6 (clean water and sanitation), 11 (sustainable cities and communities) and 13 (climate change), but also 1 (no poverty), 3 (good health and well-being), 5 (gender equality), 9 (innovation and infrastructure), 10 (reduced inequalities), and 16 (peace and justice).
68. Due to the crisis, most strategies, both national and sub-national, are often outdated, especially considering the changed context.

**Table 7: Project alignment with National priorities**

Plans and Strategies	Year submitted / ratified	Relevant priorities to align the project with
<b>Climate Change strategies / plans</b>		
INDC	2018	<p>Adaptation focus areas:</p> <ul style="list-style-type: none"> <li>• Water resource management</li> <li>• Conservation of biodiversity</li> <li>• Combating land degradation and desertification</li> <li>• Integrated coastal zone management plans</li> <li>• Development of early warning systems.</li> </ul> <p>Most relevant for this project:</p> <p>Water resources management: The priorities for adaptation to water scarcity are to reduce vulnerability, achieve sustainable agricultural production, and conserve the environment. This requires significant change in the management of water resources, policies and associated infrastructure. Adjustments to water scarcity in the agricultural sector can include:</p> <ul style="list-style-type: none"> <li>• Protect water resources (and prevent contamination of surface and groundwater resources)</li> <li>• Reduce water losses, reduce water leakage from canals, and maintain soil moisture by improving their content is organic matter.</li> <li>• Raising the efficiency of the use of irrigation water and supporting water harvesting projects, the use of high efficiency irrigation methods, and providing the quantities of water actually needed by the plant, and the use of supplementary irrigation to irrigate rain crops during drought periods.</li> <li>• Promote the use of non-conventional water resources (treated wastewater and treated wastewater); projects of industrial sewage treatment plants for large rivers such as Kalfart and Assi, pilot treatment plants for villages, spatial treatment plants for small communities and water production (valid for irrigation).</li> <li>• Improved agricultural practices (changing sowing dates, depth, improving plant nutrition, the use of crops with low water needs, drought-tolerant crops, diversification of cultivated crops, the combination of cropping, animal husbandry and fish farming, the use of conservation agriculture and the provision of extension and rural extension services to both males and to promote market linkages, etc.</li> </ul> <p>Under means of implementation:</p> <ul style="list-style-type: none"> <li>• Promote awareness and develop sustainable awareness about adapting to climate change and establishing approaches to enhance the role of local communities in the formulation and implementation of development programming.</li> </ul>
Initial National Communication	2010	<p>Main relevant climate change hazards are:</p> <ul style="list-style-type: none"> <li>• Projected increase of droughts</li> <li>• Projected increase of heat</li> </ul> <p>Main relevant climate change impacts are on:</p> <ul style="list-style-type: none"> <li>• Water resource management</li> <li>• Agriculture</li> <li>• Land degradation</li> </ul>
<b>National Development strategies / plans</b>		
Draft Humanitarian Response Plan 2018	2018	<p>Strategic priorities for early recovery focus on:</p> <ul style="list-style-type: none"> <li>• Access to basic and social services and community physical infrastructure restoration</li> <li>• Livelihoods and food security</li> <li>• People with disability care and psychosocial support</li> <li>• Social cohesion and community security.</li> </ul>
Strategic Framework for Cooperation between the Government of the Syrian Arab Republic and the United Nations 2016-2017	2016-2017	<p>The Government and the UN developed a framework for national priorities that will articulate foreseen components in regard to resilience:</p> <ul style="list-style-type: none"> <li>• Responses to people's basic needs: water, sanitation, health, housing, energy, and sustainable livelihoods and education.</li> <li>• Community needs: infrastructure, reenergizing productive sectors, including women's participation in local economic development, return of IDPs and socio-economic integration in rural areas.</li> <li>• Institutional needs: to enhance institutional performance in analysis, planning, implementation, monitoring and reporting.</li> </ul>
<b>Disaster Risk Reduction strategies / plans</b>		
National drought management strategy	2009	<p>Reducing vulnerability to drought through:</p> <ul style="list-style-type: none"> <li>• Encourage the use of technologies to mitigate drought.</li> <li>• Research on drought.</li> <li>• Increased strategic stocks</li> </ul>

National Plan to Combat Desertification	2002	<ul style="list-style-type: none"> <li>Strengthen land management</li> <li>Combat soil salinity, and mitigate its negative impacts,</li> <li>Overcome the problem of water and wind erosion</li> <li>Stop the conversion of agricultural land to other uses.</li> </ul>
<b>Environmental strategies / plans</b>		
National Strategy and Action Plan for the Environment in Syria	2003	<ul style="list-style-type: none"> <li>Contamination of surface and groundwater resources</li> <li>Land degradation</li> <li>Degradation of air quality in major cities</li> <li>Improper disposal of solid waste</li> <li>Sustainable use of water resources</li> <li>Sustainable use of land resources</li> <li>Improved urban services and infrastructure</li> <li>Sustainable development of natural and heritage resources</li> </ul>
National Biodiversity Strategy	2002	<ul style="list-style-type: none"> <li>Protection of natural biodiversity, terrestrial and aquatic biodiversity (freshwater and marine) and establish a network of nature reserves.</li> <li>Protection of agricultural biodiversity, including:</li> <li>Protection of agricultural systems, rangelands, forests and national forest areas.</li> <li>Protection of plant and animal genetic resources</li> </ul>
<b>Sectoral strategies / plans</b>		
Ministry of Water Resources and the Ministry of Local Administration and Environment and UN WASH priorities	2018	<ul style="list-style-type: none"> <li>Ensure the proper functioning of sewerage and drinking water networks and their accessories within cities and residential communities, including proper maintenance operations and functioning equipment.</li> <li>During 2019, it is estimated that the sector will need to support the implementation of /400/ sanitation projects and treatment plants, /100/ drinking water projects, and /100/ projects to improve and enhance the efficiency of solid waste management.</li> </ul>

## E. Project / programme compliance with relevant national technical standards

69. In Syria, the following mechanism is in place to obtain environmental approval for projects: "Any project is obliged to obtain an administrative license, which is a requirement to get the environmental approval. The application is submitted to the Ministry or the directorates of the environment in the governorates to obtain the environmental approval on this project".
70. The application submitted by the Ministry or the Directorate of Environment and the type of project shall be verified and examined whether it needs a study for the environmental impact prior to its establishment, as stipulated in Annex/ 1/ of the Executive instructions for environmental impact assessment procedures adopted in 2008. in case it does not need to be studied it will be granted an environmental approval with conditions on pollution and waste management within a maximum of ten days, but if the project needs a study assessing the environmental impact, the study is to be prepared by the experts accredited to the Ministry and the study is submitted for audit to the Ministry or the Directorate of Environment, Environmental approval is given on the basis of the study submitted within one and a half months. Afterward further approvals of other relevant stakeholders Related to the project are to be obtained before acquiring the administrative license.
71. The application should include:
1. Characteristics of projects
  2. Location of projects
  3. Characteristics of the potential impact
72. Relevant type of projects that require a compulsory Environmental Impact Assessment are shown in

73. Table 8.

**Table 8: Projects that require EIA**

<b>12.</b>	<b>Water management projects involving the use or development of a body of water:</b>		
<b>12.1</b>	Construction and operation of a wastewater treatment plant which		
<b>No.</b>	<b>Project</b>	<b>Col. 1</b>	<b>Col. 2</b>
12.1.1	is designed for organically polluted waste water with a five-day biochemical oxygen demand of 9000 kg/d or more (untreated) or for inorganically polluted wastewater with a wastewater volume of 4500 m <sup>3</sup> or more in two hours (excluding cooling water)	X	
12.1.2	is designed for organically polluted waste water with a five-day biochemical oxygen demand of less than 9000 kg/d (untreated) or for inorganically polluted wastewater with a wastewater volume of less than 4500 m <sup>3</sup> in two hours (excluding cooling water)		G
<b>12.3</b>	Abstracting groundwater, pumping or guiding it to the surface, or discharging surface water for the purpose of replenishment of groundwater, in each case with an annual volume of		
12.3.1	10 million m <sup>3</sup> or more of water	X	
12.3.2	less than 10 million m <sup>3</sup> of water		G
<b>12.4</b>	Deep well for water supply purposes	X	
<b>12.5</b>	Water management project in agriculture, including soil irrigation or drainage	X	
<b>12.6</b>	Construction of a dam or other installation for retaining or permanently storing water	X	
<b>12.7</b>	Diversion of water from one river catchment area to another, excluding transportation of drinking water in pipeline systems	X	
<b>12.8</b>	River canalisation and watercourse correction work	X	

**Table 9: Compliance with relevant notional technical standards**

<b>Expected concrete output / intervention</b>	<b>Relevant rules, regulations, standards and procedures (to comply to AF principle 1)</b>
<b>Output 1.2</b> INRM plans, including assessments, spatial strategies and consideration of climate change post-crisis issues and specific vulnerabilities:	<ul style="list-style-type: none"> <li>- Environmental Protection Law No. 12 of 2012</li> <li>- Law of Water Legislation No. 31 of 2005</li> <li>- Law No. 9 of 2006 aim to protect the Syrian territorial waters and the international waters</li> <li>- Law No. 16 of 1982, which includes the establishment of the Ministry of Irrigation and defining its tasks, which include study of water resources in the country and follow up the measurement, development and protection and prevention of pollution and determine the uses of them.</li> <li>- Resolution No.629 of 2007 to form Basin Management Committees.</li> <li>- Decree No. 25 of 2007 protecting forests</li> <li>- Regional Planning Law (2010/26) which adopted the regional spatial plans approach to support development across regions according to their priorities and requirements, 2012/12</li> <li>- Local Administration Law No. 15 of 1971, which gives administrative units (governorates, cities and towns) broad powers in economic, social, health and urban development</li> </ul>
<b>Output 2.1, 2.2 and 2.3</b> Measures to use non-conventional water resources. Wastewater treatment and irrigation	<ul style="list-style-type: none"> <li>- Environmental Protection Law No. 12 of 2012</li> <li>- Cleanliness Law No. 49 of 2005</li> <li>- Environmental Protection Law No. 12 of 2012</li> <li>- Approved Standard No./2580/2008/related to shed treated water in the general sewer Network.</li> <li>- Approved Standard No./2752/2008/ related to the use of treated water in irrigating crops</li> <li>- Approved Standard No./3474/2009/To dispose of treated water in watershed</li> <li>- Approved Standard No./2665/2002/for safe use of permitted waste resulting from wastewater treatment plants</li> </ul>
<b>Output 3.1 and 3.2</b> Agriculture and livestock	<ul style="list-style-type: none"> <li>- Environmental Protection Law No. 12 of 2012</li> <li>- Approved Standard No./2752/2008/ related to the use of treated water in irrigating crops</li> <li>- Agricultural Quarantine Law of 2007 (aims to prevent infection of viral, fungal and insect diseases)</li> <li>- Resolution No. 47/T of 2008 bans on the introduction, importation and exportation of plants and plant products before the inspection and control by experts of plant protection and plant quarantine.</li> <li>- Agrarian Reform Law No. 161 of 1958 and its amendments</li> <li>- Decree-Law No.41 amending Act No.21 of 1974 respecting peasants' co-operative associations</li> </ul>

## F. Duplication of project with other funding sources

74. There is no duplication of the project with other funding sources. Table 10 illustrates the project's relationship with other projects.

**Table 10: Relationship with other projects/funding sources**

Relevant projects and focus	Relevant focus and interventions / activities	Lessons learned	Complimentary potential and non-duplication
<b>MENA region</b>			
UN-Habitat - <a href="#">Increasing the resilience of displaced persons to climate change-related water challenges in urban host settlements</a> (Proposal to the AF) – USD 14M	<ul style="list-style-type: none"> <li>Managing urban risks and vulnerabilities</li> <li>Citizen engagement and livelihood support</li> <li>Resilient water service sub-projects at community level</li> <li>Improvement of policies and plans</li> </ul>	<ul style="list-style-type: none"> <li>Has not started yet; projects will be coordinated, also for lessons learned</li> </ul>	<p><u>Complementary</u></p> <ul style="list-style-type: none"> <li>Innovative technical solutions could be applied in both countries; if the same, coordinated contracting could be considered</li> </ul> <p><u>Non-Duplication</u></p> <ul style="list-style-type: none"> <li>In Lebanon and Jordan</li> </ul>
Jordan government with AF funding - <a href="#">Increasing the resilience of poor and vulnerable communities to climate change impacts in Jordan through implementing innovative projects in water and agriculture in support of adaptation to climate change</a> (2015-2018) – USD 9,2 million	<ul style="list-style-type: none"> <li>Waste water treatment plant + monitoring quality</li> <li>Irrigation study</li> <li>Rain/flood water harvesting dam / basin (400.000 m<sup>3</sup>) with solar panels to reduce evaporation</li> <li>Permaculture – adaptation + ecosystem management in demonstration sites</li> </ul>	<ul style="list-style-type: none"> <li>Permaculture has promising results for adaptation, reducing pollution and protecting ecosystems</li> <li>Water user associations / cooperations can be used to reach farmers and administer water</li> </ul>	<p><u>Complementary</u></p> <ul style="list-style-type: none"> <li>Monitor results of wastewater treatment plant</li> <li>Consider similar approach for water harvesting basins at farms and in urban areas</li> </ul> <p><u>Non-Duplication</u></p> <ul style="list-style-type: none"> <li>In Jordan Valley</li> </ul>
IFAD with AF funding <a href="#">Climate Smart Agriculture: Enhancing Adaptive Capacity of the Rural Communities in Lebanon</a> (2013-2017) – USD 8 million	<ul style="list-style-type: none"> <li>Water Management: Rainwater harvested from greenhouse roof tops and efficient irrigation systems deployed</li> <li>Adaptation Techniques Roll-out: capacity building on adaptation techniques for vulnerable crops and Guidelines and recommendations on agricultural adaptation techniques for vulnerable areas developed</li> </ul>	<ul style="list-style-type: none"> <li>Guidelines to be published</li> <li>Results from rainwater harvested from greenhouse roof tops were good but technique used was quite expensive</li> </ul>	<p><u>Complementary</u></p> <ul style="list-style-type: none"> <li>Consider building upon lessons about rainwater harvested from greenhouse roof tops</li> </ul> <p><u>Non-Duplication</u></p> <ul style="list-style-type: none"> <li>In Lebanon</li> </ul>
IFAD with AF funding - <a href="#">Building Resilience of the Agriculture Sector to Climate Change in Iraq</a> (2018-2023) – USD 10 million	<ul style="list-style-type: none"> <li>Capacity development to integrate CC adaptation and risk reduction into agriculture planning and production systems</li> <li>Climate-resilient Agriculture Investments</li> </ul>	<ul style="list-style-type: none"> <li>Has not started yet</li> <li>Monitor lessons during project formulation phase</li> </ul>	<p><u>Complementary</u></p> <ul style="list-style-type: none"> <li>Consider similar approach for capacity building and efficient water supply from tertiary canals to farmland plots is secured based on climate- proof systems and technologies</li> </ul> <p><u>Non-Duplication</u></p> <ul style="list-style-type: none"> <li>In Iraq</li> </ul>
FAO Dutch-funded <a href="#">Sanaa Basin Project in Yemen</a> (2014-2017)  Water sustainability for farmers while empowering women	<ul style="list-style-type: none"> <li>Construction of wells through a cash-for-work formula or farmers to use for agricultural production.</li> <li>All Water User Associations choose their board members through elections and 30% of the seats are designated for women.</li> </ul>	<ul style="list-style-type: none"> <li>Water association and women only access to water can be used as a water management system to reduce conflict between tribes</li> </ul>	<p><u>Complementary</u></p> <ul style="list-style-type: none"> <li>Build upon lessons from Water Association and women only access to water approach and cash-for-work formula for farmers to use for agricultural.</li> </ul> <p><u>Non-Duplication</u></p> <ul style="list-style-type: none"> <li>In Yemen</li> </ul>
<b>National</b>			
UN-Habitat programme in Syria 2015-2018	<ul style="list-style-type: none"> <li>Establishment of Water distribution networks</li> <li>Establishment of Sewage and drainage networks</li> <li>Community awareness campaigns: on health and hygiene promotions involving women, youth and children.</li> </ul>		<p><u>Complementary</u></p> <ul style="list-style-type: none"> <li>Build on UN-Habitat experience with water and sewerage</li> </ul> <p><u>Non-Duplication</u></p> <ul style="list-style-type: none"> <li>Not in target areas</li> </ul>
UNDP <a href="#">Humanitarian and Livelihoods Program</a> (2013-2015) – USD 2,5 million  Early recovery and livelihoods	<ul style="list-style-type: none"> <li>Response that provided IDPs and their host communities with rapid employment opportunities (temporary job under cash-for-work arrangement) to enhance service delivery and rehabilitate basic community infrastructure; and create/stabilize basic livelihoods in view of supporting spontaneous recovery efforts.</li> </ul>	<ul style="list-style-type: none"> <li>The removal and disposal of solid waste improved the environmental and health conditions</li> </ul>	<p><u>Complementary</u></p> <ul style="list-style-type: none"> <li>Transition from humanitarian to sustainable</li> </ul> <p><u>Non-Duplication</u></p> <ul style="list-style-type: none"> <li>In Damascus, Homs and Aleppo</li> <li>Project ended</li> </ul>
UNICEF <a href="#">WASH programme / humanitarian results</a>	<ul style="list-style-type: none"> <li>In Eastern Ghouta, UNICEF provided water to over 137,400 returnees through water trucking in 22 communities</li> </ul>		<p><u>Complementary</u></p>

			<ul style="list-style-type: none"> <li>• Sustainable and climate resilient solutions to water supply</li> </ul> <u>Non-Duplication</u> <ul style="list-style-type: none"> <li>• Project will not focus on water trucking</li> </ul>
<a href="#">FAO Strengthening the resilience to food insecurity of crisis-affected households and communities</a>	<ul style="list-style-type: none"> <li>• Rehabilitation of irrigation infrastructure (26 km)</li> <li>• Water harvesting</li> <li>• Low cost efficient irrigation systems; Solar and drip pilots</li> <li>• Conservation agriculture</li> <li>• Capacity building: Focus on irrigation</li> </ul>	<ul style="list-style-type: none"> <li>• Techniques can be replicated.</li> <li>• Communities to play a vital role in rehabilitation work</li> <li>• Technicians staff of the MoWR and GCWR to be involved</li> <li>• Water user associations / farmers to be trained to maintain and replicate activities</li> </ul>	<u>Complementary</u> <ul style="list-style-type: none"> <li>• FAO is an executing partner for the agriculture / rural related activities</li> </ul> <u>Non-Duplication</u> <ul style="list-style-type: none"> <li>• In Homs and Hama.</li> </ul>
<a href="#">IFAD Idlib Rural Development Project (2002-2013)</a> – USD 46 million Improve food security and income levels for farmers and rural women	<ul style="list-style-type: none"> <li>• Innovative, bottom-up process that features village development committees.</li> <li>• Establishment of sanduqs, which are informal, community-based microfinance institutions</li> </ul>	<ul style="list-style-type: none"> <li>• Bottom-up process that features village development committees are required for equal access</li> </ul>	<u>Complementary</u> <ul style="list-style-type: none"> <li>• Consider using Innovative, bottom-up process that features village development committees.</li> </ul> <u>Non-Duplication</u> <ul style="list-style-type: none"> <li>• In Idlib</li> <li>• Project ended</li> </ul>
<b>Eastern Ghouta and Barada Valley</b>			
International Committee of the Red Cross and Red Crescent (ICRC) and Syrian Arab Red Crescent (SARC)	<ul style="list-style-type: none"> <li>• The main NGO in both Eastern Ghouta region. With assistance by UNICEF, SARC has provided resources to reduce water deficits. Activities are humanitarian type, such as water trucking.</li> </ul>		<u>Complementary</u> <ul style="list-style-type: none"> <li>• Support sustainable and climate change resilient water supply, storage, treatment and irrigation options.</li> </ul> <u>Non-Duplication</u> <ul style="list-style-type: none"> <li>• Not for sustainable measure (compared to emergency / humanitarian)</li> </ul>
UN-Habitat MTOS project Planning process at city /neighborhood level prioritizations of needs/projects	<ul style="list-style-type: none"> <li>• Phase 1: 22 municipalities / technical offices support and training program (include the Eastern Ghouta and municipalities)</li> </ul>	<ul style="list-style-type: none"> <li>• Enhancing consultation process with the local authorities and local community</li> </ul>	<u>Complementary</u> <ul style="list-style-type: none"> <li>• Support sustainable and climate change resilient water supply, storage, treatment and irrigation options</li> </ul> <u>Non-Duplication</u> <ul style="list-style-type: none"> <li>• No duplication but integrated process at national and sub national level for a the phase 2 of the MTOS to cover spatially more areas</li> </ul>
Ongoing initiatives by GoS	Preserve green spaces and reduce crawling through expansion of organizational charts and vertical expansion. To move towards the implementation of wastewater treatment plants and to invest the resulting water in collective irrigation projects. Towards the formation of associations of water users on existing water resources. The use of renewable energies to pump groundwater (solar energy). Follow modern irrigation methods and techniques to rationalize water consumption. Revisiting the agricultural productivity plan in order to determine the type of plantations that consume less water in light of the decline of the flow and the reduction of groundwater levels.	<ul style="list-style-type: none"> <li>• Approach and techniques can be replicated</li> </ul>	<u>Complementary</u> <ul style="list-style-type: none"> <li>• <u>Support sustainable and climate change resilient water supply, storage, treatment and irrigation options</u></li> </ul> <u>Non-Duplication</u> <p>No duplication but integrated process with current proposal</p>

## G. Learning and knowledge management component to capture and disseminate lessons learned

75. Component 1 Output 1.3 sets out to develop a framework to share lessons regarding post crisis rehabilitation efforts, taking into account climate change and environmental issues. Whilst this component provides the cornerstone for capturing and disseminating lessons learned, other project components directly contribute to knowledge management mechanisms and dissemination of lessons learned (see table below).
76. Because of increasing relative stability in large parts of the country, a transition from humanitarian response to sustainable response, including responding to climate change, especially in the water sector, is required. Assessment, planning and management approaches and low-cost innovative techniques that address direct and long-term water scarcity issues benefitting the most vulnerable need to be urgently showcased for replication throughout the country. Capacities of government institutions and officials will be strengthened to replicate these approaches and techniques. Ministry of Local Administration and Environment Affairs (MoLAE) will capture lessons and share these among ministries, sub-national government bodies and the wider public. UNDP and FAO have been involved in this project as executing partners and lessons will be shared among these partners and others relevant stakeholders working on climate change, the environment and post crisis rehabilitation efforts through the Resident Coordinator. Knowledge sharing tools used will include social media streams (twitter, Facebook, etc.) plans and guidelines. Also, videos will be produced.
77. Lessons will be relevant beyond the Syrian context. Therefore, the project team will also share lessons through international events, with relevant climate change bodies such as the UNFCCC and the Global centre on Adaptation and with UN agency offices, especially in the MENA region.

**Table 11: Learning and knowledge management**

Expected Concrete Outputs	Learning objectives (lo) & indicators (i)	Knowledge products
<b>Output 1.1.</b> - X number of workshops / trainings + Strengthening the Climate Change Adaptation Unit at the Directorate of Atmospheric Safety / Central Administration - Ministry of Local Administration and Environment	(lo): To enhance capacity and develop a model to assess, plan and manage climate change-induced and crisis-related fragility issues (esp. water scarcity and related livelihoods) in a sustainable and climate change resilient way (i): Model	- Model / Guidelines for replication
<b>Output 1.2.</b> X number INRM plans and climate change resilience action plans, including assessments, spatial strategies and consideration of climate change and fragility issues and specific vulnerabilities:	(lo): To develop a model and build capacity to prepare INRM plans that can be replicated (i): Model	- Watershed INRM plan - Local INRM plans - Climate change resilience action plans - Model / Guidelines for replication
<b>Output 1.3.</b> National framework for replicating the watershed / areas-based climate change resilient water-related assessment, planning and management approach, including techniques used: - X National level workshops required to develop the framework - X policy and regulatory recommendations papers	(lo): understand what is required to establish on the left (i): Number of guidelines, recommendation papers	- Guidelines for replication - Recommendation papers
<b>Output 2.1.</b> Non-conventional water resources for urban and agriculture purposes identified and demonstrated, using innovative and replicable techniques	(lo): collect and share information on best practice low-cost and replicable innovative techniques in Syrian climate change and fragility context. (i): Number of techniques showcased	- Showcased models with guidelines for replication

<b>Output 2.2 and 2.3</b> Mapping and assessment of water/wastewater network risks. Development of rehabilitation and O&M plans. Key risk areas rehabilitated – innovative solutions sought	(lo) use of modern technology for mapping and assessment Innovative techniques for rehabilitation (i) number of plans produced and initiated.	- Guidelines for replication - Showcase/demonstration sites
<b>Output 3.1 and 3.2</b> Introduction of water efficient agricultural technology and climate resilient agricultural practices	(lo) collect and share information on best practice low-cost and replicable innovative techniques in Syrian climate change and fragility context. (i): Number of techniques showcased	- Guidelines for replication - Showcased/demonstration sites
<b>Output 3.3</b> Promotion of non-water dependent livelihoods	(lo) collect and share information on alternate sustainable non-water dependent livelihoods (i) number of alternate livelihoods showcased	- Recommendation / guideline papers

## H. Consultative process

78. This Concept Note has been developed based initial consultation activities (Table 12 and Table 13). During the proposal development the full range of stakeholders are consulted with.

79. Four type of consultations shaped the Concept Note:

- Consultations to align with National priorities (with MoLAE and other ministries): Throughout the concept note proposal development phase, UN-Habitat worked closely together with MoLAE (with weekly meetings) in order to prepare this proposal. The target areas have been selected together and duplication with government projects avoided. MoLAE conducted field visits and consultations with potential beneficiaries in Eastern Ghouta (results in table 11).
- Consultations to avoid duplication with other projects (government, UN agencies, NGOs, etc.)
- Consultations with communities and vulnerable groups. Although MoLAE and a partner NGO conducted consultations with beneficiary groups in municipalities in target areas, consultations targeting all beneficiary groups will be conducted during the full proposal development phase.
- Consultations to identify potential environmental and social risks and impacts, in line with AF policies (Consultation Plan Annex 3 + draft gender baseline and approach in Annex 4) This is partly done during the concept not proposal development phase. However, due to the crisis situation, data availability is limited. During the full proposal development phase, consultation with all beneficiary vulnerable groups, including focus groups with women and youth, will be completed.

80. A partner NGO conducted the following consultations (Table 12):

**Table 12: Consultation undertaken by NGO**

Position	Name
Carpenter: Small business owner	Name withheld
Aluminum (doors and windows) maker: small business owner	Name withheld
Tyre repairer: small business owner	Name withheld
Local community member: Syrian woman x3	Names withheld
Mleiha Mayor	Eng. Omar Al Assass
Mleiha Deputy Mayor	Mr. Bilal Arafah
Contractors (school rehabilitation Mleiha)	Avedis Contractor company
SAA Checkpoint staff (upon entry)	Names withheld

81. MoLAE conduced the following field visits and consultations:

- AF CC MoLAE work team : field visit East Ghoutta, Municipality: Mleiha
  - Identified the farms polluted by the untreated waste water coming from Jaramana located in Mleiha surrounding at the entrance of the village
  - Meeting with the mayor of Mleiha

- Meeting with the director of 8MARS farms project near Mleiha: the farms are owned by the governorate but invested by the public sector. Purpose: to identify the problem of the polluted fields and decrease in ground water in irrigation area
- AF CC MoLAE work team : field visit East Ghoutta, Municipality: Deir AlASSafir -Zabdine - Houteitat Aljarash
  - Meeting with the local community and mayor and the representor of the public farmer originations MR IMAD ALLAN with the participation of representative of women farmer community, and the local, farmer and owner of a tree and livestock farm
  - Identified issues: irrigation difficulties and high cost pumping from deep wells
  - Identifying drought areas: fields /crops affected by lack of water
- AF CC MoLAE work team: field visit East Ghoutta, Municipality: Bzeina -Marj AL sultan
  - Identifying the expansion of the drought fields comparing to before
  - Filming the drought fruit trees due to lack of water, less rain.

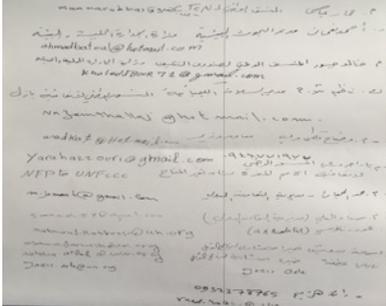
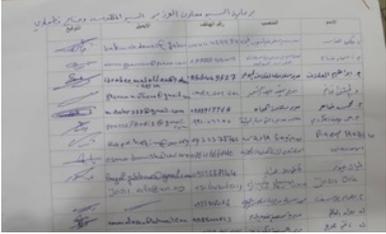


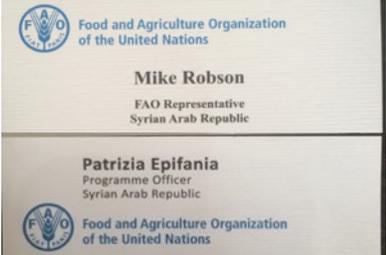
**Figure 8: Women farmer community representative and farmer consultation**

82. As indicated above, further consultation will be undertaken as part of the full proposal development. A consultation plan has been prepared (Annex 3) which will form the basis for further consultation activities.

\*During the full proposal development phase, all key stakeholders and beneficiary groups will be consulted. To further development the full proposal, field assessments and consultations with all beneficiary groups will take place in February 2020 (feasibility assessments), April (risks screening and impact assessments) and June (final consultations).

**Table 13: Consultations and Meetings with key stakeholders**

Stakeholder	Consultation objective	Outcome	Conclusion	Evidence
<p>MoLAE / Environmental Committee:</p> <ul style="list-style-type: none"> <li>- Wadah Qdmaouy Minister Deputy for Environmental Issues, MOLAE</li> <li>- Ibrahim Alallan Director of Atmospheric Safty MOLAE</li> <li>- Sonia Afesa , Director of International Cooperation, MOLAE</li> <li>- Yara Hazory National Coordinator of the United Nations Cooperation on Climate Change, MOLAE</li> <li>- Khaled Jabour National Adaptation Fund Coordinator (DA), MOLAE</li> <li>- Belal Alhayek director of Land and biodiversity MOLAE</li> <li>- Rawnak Jabbour Director of Laboratories MOLAE</li> <li>- Ahmad Noamam Director of Environmental Research, MOLAE</li> <li>- Imad Almerie NFP to UNCCD , MOLAE</li> </ul>	<ul style="list-style-type: none"> <li>- Agree with MOLAE representatives, Environmental Committee and Designated Authority on modality (ToR) to develop the concept note proposal</li> <li>- Agree on main project approach and target watersheds</li> </ul>	<ul style="list-style-type: none"> <li>- A working group consisting of key stakeholders, incl. UN-H team members was established to develop the concept note proposal; meetings have been held <b>at least every two weeks</b></li> <li>- Approach / focus will align with strategy in the government Initial National Communication, the INDC under development and different ministry plans</li> <li>- Target watersheds have been identified</li> </ul>	<ul style="list-style-type: none"> <li>- MOLAE and the Environmental Committee support the modality to develop the concept note proposal</li> </ul>	  <p>Date: Regular meetings since 2018 Technique: technical meeting</p>
<ul style="list-style-type: none"> <li>-</li> </ul>	<ul style="list-style-type: none"> <li>- Agree with MOLAE representatives, Environmental Committee and Designated Authority on:</li> <li>- Focus of the proposal</li> <li>- Approach to select target municipalities / communities</li> <li>- Approach to fill data gaps and consult target municipalities and communities</li> </ul>	<ul style="list-style-type: none"> <li>- The proposal will focus on addressing water challenges in watersheds</li> <li>- Criteria to identify target municipalities / communities have been agreed upon</li> <li>- MoLAE will consult target governorates, municipalities and communities and vulnerable groups</li> </ul>	<ul style="list-style-type: none"> <li>- Easter Ghouta is MoLAE priority target area. The most vulnerable area (municipalities) within Ghouta will be selected for concrete interventions.</li> <li>•</li> </ul>	  <p>Date: Regular meetings since 2018 Technique: technical meeting</p>

Stakeholder	Consultation objective	Outcome	Conclusion	Evidence
Representatives from: <ul style="list-style-type: none"> <li>- MoLAE</li> <li>- Ministry of agriculture</li> <li>- Ministry of water resources</li> <li>- Governorates</li> <li>- Municipalities in Eastern Ghouta (<b>20 mayors</b>)</li> <li>- Agriculture syndicate</li> </ul> Total: 55 participants (excluding UN-Habitat)	<ul style="list-style-type: none"> <li>- Identify main climate change impacts in target area</li> <li>- Identify specific issues, needs, concerns in target area (by mapping by mayors)</li> <li>- Agree on area most in need</li> </ul>	<ul style="list-style-type: none"> <li>- Relevant ministries to establish a project work group</li> <li>- Main issues in Eastern Ghouta are: droughts / lack of water, pollution coming from the west, poverty, and damages.</li> <li>- People are starting to come back but need assistance to rebuild their life</li> </ul>	<ul style="list-style-type: none"> <li>- Main climate change-related issues are clear (see figures 7 and 8). Barriers to adapt and crisis impact also.</li> <li>- Mayors are on board and requested support</li> <li>- Mayors provided useful information on local situation in 2018.</li> <li>- Ministries and governorates are also on board.</li> </ul>	 <p>(due to large number of participants more attendance sheets can be shared on request) Date: 27-11-2018 Technique: Workshop</p>
Mike Robson FAO representative FAO Syria  Patrizia Epifania Programme officer FAO Syria	<ul style="list-style-type: none"> <li>- Identify climate change-related issues in agriculture sector in target areas</li> <li>- Avoid overlap of projects and use lessons learned</li> <li>- Explore options of cooperation</li> </ul>	<ul style="list-style-type: none"> <li>- Agriculture very vulnerable because of dependence on water</li> <li>- FAO has some best practices to respond to climate change in Syria</li> <li>- FAO could be potential executing entity of this project</li> </ul>	<ul style="list-style-type: none"> <li>- FAO could be potential executing entity of this project and FAO best practices could be used – will require close cooperation during full proposal development phase.</li> </ul>	 <p>Date: 15-11-2018 Technique: discussion</p>
UNHCR  Senior Return and Reintegration Team	<ul style="list-style-type: none"> <li>- Mapping of relevant projects and lessons learned</li> <li>- Understand needs and issues in target area</li> <li>- Consultations for AF ESP and GP compliance (needs DPs / returnees)</li> </ul>	<ul style="list-style-type: none"> <li>- The spontaneous return of refugees and IDPs will greatly exacerbate demands on natural resources and especially natural resource dependent livelihoods.</li> <li>- The inability to adapt to degraded natural resources due to climate change – especially livelihood related impacts – can result in increased tensions and potentially future unrest and displacement</li> </ul>	<ul style="list-style-type: none"> <li>- UNHCR and UN Habitat could explore the issue through the Refugee and Reintegration Working Group alongside senior government representatives</li> </ul>	Meeting with Ajmal Khybari, UNHCR Syria  10-12-2018

Stakeholder	Consultation objective	Outcome	Conclusion	Evidence
Faten Tibi Programme Manager Women and Youth Empowerment Programme in Host communities  UN Women Lebanon + Syria	<ul style="list-style-type: none"> <li>- Mapping of relevant projects and lessons learned</li> <li>- Understand needs and issues in target area</li> <li>- Consultations for AF ESP and GP compliance (needs and issues women)</li> </ul>	<ul style="list-style-type: none"> <li>- Many women work in agriculture + food processing.</li> <li>- Need to ensure secure / safe environment (i.e. protection) for women during work since gender based violence can still be an issue in the region</li> </ul>	<ul style="list-style-type: none"> <li>- Consider women roles in agriculture and water handling when designing the project</li> <li>- Ensure women protection measures are in place for the project (when needed)</li> </ul>	 <p>Date: 08-11-2018 Technique: discussion</p>
Sarah El jamal Programme officer Regional office for Arab States in Lebanon  ILO	<ul style="list-style-type: none"> <li>- Mapping of relevant projects and lessons learned</li> <li>- Understand needs and issues in target area</li> <li>- Consultations for AF ESP and GP compliance (core labour rights)</li> </ul>	<p>Agriculture:</p> <ul style="list-style-type: none"> <li>- Syria has not ratified: C184 - Safety and Health in Agriculture Convention, 2001 (No. 184)</li> </ul> <p>Construction:</p> <ul style="list-style-type: none"> <li>- Syria has not ratified: C167 - Safety and Health in Construction Convention, 1988 (No. 167) <ul style="list-style-type: none"> <li>• Migrant workers:</li> </ul> </li> <li>- Syria has not ratified: C143 - Migrant Workers (Supplementary Provisions) Convention, 1975 (No. 143)</li> </ul> <p>Women:</p> <ul style="list-style-type: none"> <li>- Syria has not ratified: P089 - Protocol of 1990 to the Night Work (Women) Convention (Revised), 1948</li> </ul>	<ul style="list-style-type: none"> <li>- The project should put measures in place to avoid potential risks related to the left, which basically means ensuring safe and equal working opportunities and conditions for all groups</li> </ul>	 <p>Date: 16-11-2018 Technique: discussion</p>
Ali Hayajneh Water and CC programme  IUCN regional office	<ul style="list-style-type: none"> <li>- Mapping of relevant projects and lessons learned</li> <li>- Understand needs and issues in target area</li> <li>- Consultations for AF ESP and GP compliance (natural habitats, biodiversity and soils)</li> </ul>	<ul style="list-style-type: none"> <li>- IUCN is developing water security action plans at municipal level</li> <li>- IUCN helped to identify potential (sub-project risks related to natural habitats, biodiversity (IUCN red list) and fragile soils in target areas</li> </ul>	<ul style="list-style-type: none"> <li>- There are no protected areas in or near Ghouta and Barada valley watershed In the Golan Heights, and Yarmuk valley (close but not in eastern Ghouta target are) there are some bird areas and mammals, flora and fish that are threatened.</li> </ul>	 <p>Date: 19-11-2018 Technique: discussion</p>

## I. Justification for funding requested

83. The proposed project components, outcomes and outputs fully align with national and local government / institutional priorities and gaps identified (with a clear and direct response to needs in water resource management identified in the 2018 INDC and those of mayors in the target area). The components, outcomes and outputs also align with needs of identified community and vulnerable groups and with the Adaptation Fund outcomes. This alignment has resulted in the design of a comprehensive approach to address climate change related water scarcity issues in a fragile state.
84. While the scale of damage and needs caused by the crisis requires continuation of the humanitarian response in many parts of the country, Government control of major population centers and a rising number of returnees escalate the need to expand sustainable (and climate change resilient) development solutions, including regaining livelihoods and basic services. Apart from providing promising business opportunities and economic growth, investments can substantially contribute in the current country context to reduce the need for continued humanitarian assistance, stem further migration from rural to urban areas and encourage the return of IDPs and refugees. In contrast, further neglect of productive farming areas will force more people to leave already depopulated rural areas, making eventual recovery harder, longer and more costly to achieve.
85. Due to the crisis, government capacity, both in terms of human resources and financing, is reduced compared to before the crisis. In addition, due to remaining sanctions, the government has little income and means to respond to needs. As such, Syria depends to a large extent on external financial support from other countries, and on assistance from the UN and other agencies.
86. The table below provides a justification for funding requested, focusing on the full cost of adaptation reasoning, by showing the impact of AF funding compared to no funding (baseline) related to expected project outcomes.

**Table 14: Overview of impact of AF funding compared to no funding (baseline) related to expected project outcomes**

Project outcomes	Baseline (without AF)	Additional (with AF)	Comment and alternative adaptation scenario's
<p><b>Outcome 1.1.and 1.2</b> Strengthened National, governorate and municipal-level Institutional capacity to assess, plan and manage climate change-related and fragility risks and vulnerabilities, especially related to water, in a participatory, integrated sustainable and climate change resilient way (in line with AF outcome 1 and 2)</p> <p>Strengthened community-level awareness and ownership of processes and interventions (in line with AF outcome 3).</p>	<p>In Syria, water is usually managed at micro or district scale and not by looking at larger systems (watersheds), which leads to unsustainable management.</p> <p>Detailed / specific climate change threat and hazard information / evidence is not available, as well as general population, urbanization and environmental trends and projects for most areas in Syria, which means the government and communities can't plan for adaptation / resilience measures</p> <p>Due to the crisis, capacities of both the government and communities had a major blow, resulting in a lack of capacity to operate and sustain resilient water supply systems and related</p>	<p>The activities related to this outcome will allow government institutions to assess, plan and manage climate change-related and fragility risks and vulnerabilities, especially related to water, in a participatory, integrated, sustainable and climate change resilient way</p> <p>The activities related to this outcome will enable communities and vulnerable groups to operate and sustain systems and to assess, plan and</p>	<p>The government lacks the capacity and financial resources to execute activities related to this outcome without support</p> <p>Without sustainable and climate change resilient water management approaches (considering larger water systems and techniques to reduce water consumption), target areas (and Syria as a whole) will become more water scarce, resulting in negative effects for poverty reduction targets and livelihood.</p> <p>Communities and vulnerable groups lack the capacities to operate and sustain systems and to assess, plan and manage these together.</p> <p>Without sustainable and climate change resilient water management approaches at community level, target areas will become more water scarce, resulting in negative effects for poverty reduction targets and</p>

	livelihoods	manage these together. It will also increase livelihood / income security	livelihood security
<b>Outcome 1.3</b> Establish a National Framework for replicating INRMP and other climate resilient techniques/technologies in other areas. Enable capturing and sharing of lessons and to integrate these in policies and regulations (in line with AF outcome 7)	The national government has limited capacity (available models, tools, techniques and financial resources) to develop and replicate water management models that enhance sustainability and climate change resilience, especially in a changed context (considering also the impacts on the crisis)	The activities related to this outcome will allow the government to replicate the approach in the project target areas.	The government need to develop their own capacity and knowledge products related to resilient development, especially in response to less water / drought  Without activities related to this outcome, there is a risk that interventions won't be replicated and sustained and demand for adopting similar approaches is not generated; and high level support and engagement for the proposed approach is not mobilized.
<b>Outcome 2.1, 2.2 and 2.3</b> Increased adaptive capacity within the water / natural resources sector, using innovative, cost-effective climate change resilient water supply and treatment techniques, which are replicable + capacities strengthened to operate and sustain climate change resilient water supply systems (in line with AF outcome 1 and 4)	Target communities have very limited options (capacity – skills and technically - and financial resources) to protect their people and assets against climate change impacts, especially droughts, and against environmental issues. Moreover, the crisis destroyed much of their assets	The activities related to this outcome will allow target communities to protect inhabitants and assets against climate change impacts, especially droughts	Large scale interventions have the risk of not being community driven and appropriate and will also not respond to the situation (i.e. urgent needs and flexibility of systems required, taking into account possible numbers of returnees)  Alternative adaptation scenarios are ad hoc humanitarian responses, which would respond to urgent needs, but not in a sustainable and climate change resilient way.
<b>Outcome 3.1 and 3.2</b> Increased resilience of water-dependent livelihoods and security of income for vulnerable people, using water efficient, innovative, cost-effective climate change resilient techniques for agriculture production (in with AF outcome 6)	Target communities have limited access to climate smart technology and techniques for agriculture. Traditional irrigation is not efficient and drought tolerant crops and livestock limited. Extension services for farmers exist but are too limited or officers lack the necessary knowledge and capacity.	The activities related to this outcome will allow communities to improve efficiencies and productivity through adoption of new technology, species and techniques.	Without sustainable and climate change resilient agriculture approaches at community level, target areas with diminishing water resources will become less and less productive in terms of agriculture, resulting in negative effects for poverty reduction targets and livelihood security.
<b>Outcome 3.3</b> Increased community awareness of and ability to adopt non-water dependent livelihoods	Target communities currently focussed on water dependent livelihoods. Knowledge of feasible alternatives limited. Non-water dependent livelihoods operate in an ad hoc way. Cooperatives/groups (eg water user groups) non-existent or weak.	The activities related to this outcome will allow communities to explore and begin to adopt alternate livelihoods to diversify their income streams and so provide greater climate resilience	Communities and vulnerable groups lack the knowledge and capacities to identify and adopt unfamiliar/untried livelihoods.  Ad hoc attempts unlikely to be successful due to lack of coordination or incorrect livelihood selection.

## J. Sustainability of the project/programme

87. The project sees that the main way to sustain the achievement of the project in the long run is by linking the adaptation initiatives and lessons to the establishment of an institutional framework, which supports climate resilience building at different levels and its further replication.
88. By engaging communities and vulnerable groups in project activities, including assessments, planning and decision-making processes, the project aims to achieve building of communities' awareness and capacities, and furthermore ownership and leadership in the area of water management. Specific emphasis will be given to community capacity strengthening to operate and maintain the systems.
89. Investing in increasing the resilience of vulnerable assets and livelihoods is a sustainable economic approach. It will not only avoid future costs related to climate change and disaster impacts, but it will also enhance livelihood options, improve the health and security of the community.
90. With all three components, the project aims to support sustainable development in Syria compared to a currently humanitarian driven approach.
91. During the full proposal development phase, sustainability / maintenance arrangements for all proposed activities will be fully identified / established and verified. Support mechanisms to scale-up and replicate interventions will also be further identified and agreed upon during the full proposal development phase with relevant ministries, governorates, municipalities and UN agencies. At this stage, maintenance arrangements have been proposed for concrete adaptation actions and included in Table 15 below. During the project, operation and maintenance plans will be developed for each adaptation measure.

**Table 15: Proposed arrangements to sustain /maintain, replicate and upscale project activities and supporting mechanisms**

Proposed adaptation actions	Maintenance arrangements and mechanisms to support this	Replication and upscaling arrangements and mechanisms to support this
Protect water resources (and prevent contamination of surface and groundwater resources / wells) <ul style="list-style-type: none"> <li>• <b>Regional Integrated water resource management</b></li> </ul>	GoS – monitoring and updating of INRMPs are required with a 3-5 year review period).  Responsible: Ministry of Water Resources How: identify responsibilities, coordinate with municipalities, local communities and allocate required budget	Approach and lessons learned captured for replication in Syria, including building ministry and municipalities, local communities capacities to do so and guidelines  Responsible: Ministry of Water Resources How: identify responsibilities, coordinate with municipalities, local communities and allocate required budget to develop new plans
Reduce water losses, reduce water leakage from canals, and maintain soil moisture <ul style="list-style-type: none"> <li>• <b>Rehabilitate key risk areas of wastewater network</b></li> <li>• <b>Increase efficiency of water network, rehabilitation and O&amp;M plan</b></li> </ul>	O & M plans will be developed, including identified responsibilities and budget allocations from national and municipal governments  Responsible: Ministry of Water Resources in coordination with the ministry of Agriculture. How: coordinate with public institutions for drinking water and sanitation in each governorate and municipality and water use / farmers associations	Approach and lessons learned captured for replication in Syria, including building ministry and municipalities, local communities capacities to do so and guidelines  Responsible: ministry of Water Resources How: identify responsibilities, coordinate with municipalities, local communities and identify possible sources of funding for replication and upscaling. Mobile treatment plants can be used in a flexible way, meaning that on the long-term, when larger WWTP are build up-stream, the mobile plants could be relocated, if needed.
Promote the use of non-conventional water resources (treated wastewater); pilot treatment plants for villages, spatial treatment plants for small communities and water production	Mobile system, biological treatment, no chemicals added; energy efficient use by installing solar panels or battery pack is possible, sludge reusable for agriculture. O & M plans will be developed, including identified responsibilities and budget	Mobile treatment plants can be used in a flexible way, meaning that on the long-term, when larger WWTP are build up-stream, the mobile plants could be relocated, if needed.

<ul style="list-style-type: none"> <li>• <b>Mobile wastewater treatment plants (+ irrigation connections) upstream to stop pollution downstream (urgent issues) and use treated water for agriculture</b></li> </ul>	<p>allocations from national and municipal governments.</p> <p>Responsible: Ministry of Water Resources in coordination with both local Councils and the public utilities</p> <p>How: Ministry of Water Resources can supervise and provide required technical support. Water use / farmers association can play a role in maintenance.</p>	
<p>Raising water use efficiency, supporting water harvesting projects and using high efficiency irrigation methods</p> <ul style="list-style-type: none"> <li>• <b>Drip system (or Goasis approach– see Annex 2)</b></li> <li>• <b>Rain or stream water harvesting + storage at farms</b></li> </ul>	<p>Ministry of Agriculture and Agrarian Reform – has an annual guidance program implemented by the Directorate of Agricultural Extension / associations. O &amp; M plans will be developed, responsibilities identified and budget allocated from national and municipal governments. Maintenance will mostly require cleaning the irrigation networks. Trainings and coordination will be provided to water use or farmers associations.</p>	<p>Approach and lessons learned captured for replication in Syria, including building ministry, municipalities, local communities and water use / farmers associations capacities to do so and guidelines</p> <p>Responsible: ministry of Agriculture and Agrarian Reform</p> <p>How: identify responsibilities, coordinate with local governments and identify possible sources of funding for replication and upscaling. Business models for replication by farmers will also be explored during the full proposal development phase. FAO has a good practice on trainings water use association for replicating project lessons.</p>
<p>Improved agricultural practices (changing sowing dates, drought tolerant crops, conservation agriculture, extension and rural extension services</p> <ul style="list-style-type: none"> <li>• <b>Drought tolerant crops / trees</b></li> <li>• <b>Water efficient irrigation systems</b></li> <li>• <b>Climate resilient agricultural practices</b></li> </ul>	<p>Responsibility: Ministry of Agriculture and Agrarian Reform in coordination with ministry of Water Resources, water or farmers associations and local communities.</p> <p>How: Ministry of Agriculture and Agrarian Reform (MAAR) can supervise and provide required technical support. Water association / farmers associations can play a role in cleaning and maintenance. Additionally MAAR is responsible for agriculture policy and identifying the suitable crops for each soil and water. At the same time, MAAR in coordination with other stakeholders (i.e. FAO, MoAE and MWRs) is responsible for applying climate smart agriculture practices.</p>	<p>MAAR with its branch of The General Commission for Scientific Agricultural Research (GCSAR) will identify the successful applications and lesson learned to repeat successful applications in suitable locations.</p>

The Ministry of water resources and its active departments in Rural-Damascus are responsible for conducting water assessment, both for domestic and wastewater in the target municipalities. These institutions have a mechanism to manage, monitoring and maintain the proposed water-related project activities in the target area based on the national requirement and compliance with ESIA policies. Through the ministries' related department, participatory processes will take place with local community representors and beneficiaries' groups, including water user associations and farmer associations, as well as with the municipalities through meetings and training sessions to assure sustainability and quality of the interventions.

The ministry of agriculture and Agrarian Reform and its active departments in Rural-Damascus are responsible for agricultural and irrigation activities. In line with their national and sub-national strategies, they are to define the type of climate resilient crops, including needed field / soil assessments (and inspection soil). Water use / farmer associations will participate in the process, to identify the most efficient 'collective' irrigation options connected with the treated water sources and innovative farming systems, but also to identify maintenance needs and arrangements and options for replication.

If water use association are not established or functional in the target areas, these will be set-up. Their main responsibilities will be to: 'equally' distribute available water resources among farmers according to the developed irrigation schedule and to operate and maintain the rehabilitated /installed irrigation system. 'Impacts' will be monitored: this is to measure the impact of rehabilitated/installed irrigation system on agricultural productivity. Besides that capacities of institutional staff and water use association members / farmers will be build using four pillars:

- o Coaching during activity design, implementation, supervision and maintenance
- o On the job-training
- o Courses with demonstration field visits (farmers are involved)
- o Applying case studies and giving courses on used tools

## **K. Overview of the environmental and social impacts and risks identified as being relevant to the project / programme.**

92. The proposed project seeks to fully align with the Adaptation Fund's Environmental and Social Policy (ESP), and its 15 safeguard areas, Gender Policy (GP). Further to Section II.E above on compliance with standards, outlined below is a summary of the findings of the initial screening process to identify and evaluate potential environmental and social risks and impacts of proposed interventions and based on that, of the entire project. With this information, the entire project has been categorized. As shown in Section II.H and Annex 3, consultations have been conducted to identify potential environmental and social risks and impacts and to identify specific group's needs and possible concerns. These include consultations with UNHCR (potential risks and needs DPs), UN Women (potential risks and needs women), ILO (potential risks Labour standards), IUCN (potential risks Natural habitats and biodiversity) and farmers and women. Consultations and assessments to further identify potential environmental and social risks will be conducted during the full proposal, especially with / focused on DPs / returnees, women, youth, etc.
93. A draft gender baseline and approach has been inserted as Annex 4. Details will be completed, and more consultations conducted, during to identify potential risks during the full proposal development phase. An Annex to show how the project complies to the AF ESP and GP in detail will also be included in the full proposal document.
94. Normative, planning and capacity development activities (i.e. non-concrete interventions) under Component 1 consist of plan development and capacity development. The project will ensure beneficiary groups will be equally represented and equal benefit from the project activities. In the full proposal document, measures will be proposed to ensure that no environmental or social impacts can occur.
95. Activities under Components 2 and 3 are 'concrete' adaptation actions. Because of the scope of the proposed activities, which are numerous, small scale and very localized, and, where possible, proposed and managed by communities who have a stake in avoiding environmental and social risks and impacts, potential direct impacts will only be 'allowed' when manageable and indirect impacts and transboundary impacts are highly unlikely. Given this, cumulative impacts are also unlikely. As a result, the entire project is regarded as a medium risk (Category B) project. During the full proposal development phase, all proposed activities will be selected and detailed so that potential risks and impacts can be fully identified, and if a risk exist, measures proposed to mitigate these.
96. The project is designed to generate positive economic, social and environmental impacts, using inputs from especially women and youth and DPs and returnees in target communities and by incorporating best practices from other projects. During the full proposal development phase, all required consultation will be completed. The adaptation measures proposed have been selected together with mayors and group representatives, making sure they are culturally appropriate and local.

**Table 15: Overview of environmental and social impacts and risks\***

\*Further details on initial screening and additional actions required for compliance with AF ESP and Gender

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>	Complete assessments during full proposal development phase	
<i>Marginalized and Vulnerable Groups</i>		
<i>Human Rights</i>		
<i>Gender Equity and Women's Empowerment</i>		
<i>Core Labour Rights</i>	x	
<i>Indigenous Peoples</i>	x	
<i>Involuntary Resettlement</i>	Complete assessments during full proposal development phase	
<i>Protection of Natural Habitats</i>		
<i>Conservation of Biological Diversity</i>		
<i>Climate Change</i>		
<i>Pollution Prevention and Resource Efficiency</i>		
<i>Public Health</i>		
<i>Physical and Cultural Heritage</i>	x	
<i>Lands and Soil Conservation</i>	Complete assessments during full proposal development phase	

Policies are given in Annex 3 and 4.

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

### A. Record of endorsement on behalf of the government<sup>21</sup>

**Syrian Arab Republic**  
Ministry of Local Administration & Environment



الجمهورية العربية السورية  
وزارة الإدارة المحلية والبيئة

**Letter of Endorsement by Syrian Arab Republic**

16<sup>th</sup> Dec. 2019

To: Adaptation Fund Board  
c/ Adaptation Fund Board Secretariat  
Email: Secretariat@Adaptation-Fund.org  
Fax: 202 522 3240/5



ADAPTATION FUND

**Subject:** Endorsement for the project 'Climate change resilient communities through integrated natural resource management in Eastern Ghouta in Rural Damascus, Syria.'

In my capacity as designated authority for the Adaptation Fund in the Syria, I confirm that the above single country project proposal is in accordance with the government's priorities, especially those in the INDC, in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Eastern Ghouta in Rural Damascus, Syria.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by UN-Habitat, and executed by UNDP, and FAO.

Sincerely,

**Eng. Khaled Jbour**  
National Focal Point to Adaptation Fund  
Ministry of Local Administration and Environment



Syria- Damascus, Yousef Azmeh Seq    Tel: +963 11 2318682/3    web: [www.mola.gov.sy](http://www.mola.gov.sy)  
Fax: +963 11 2320726    Email: [info@mola.gov.sy](mailto:info@mola.gov.sy)

<sup>6</sup>. 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.

## B. Implementing Entity certification

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 in Syria, especially the INDC, subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.



**Raf Tuts,**  
Director, Global Solutions Division,  
UN-Habitat

Date: 17<sup>th</sup> January 2020

Tel.: +254-20-762-3736;

E-Mail: raf.tuts@un.org

Project Contact Person: Erfan Ali & Chamith Fernando, Regional Office for Arab States

E-Mail: erfana.ali@un.org; chamith.fernando@un.org

## Annex 1: Project theory of change

What is the problem to solve?	What is the key audience	Entry point to reach audience?	What steps are needed to bring about change?	What is the measurable effect (output)?	What are the benefits (outcomes)?	What is the long-term impact?
Lack of sustainable solutions for water-use in consideration of declining water resources in urban and rural areas due to a combination of climate change (i.e. less rain, more droughts, high temperatures) and higher pressure on basic services due to the crisis induced impact (i.e. rapid, unplanned urbanization, damaged infrastructure assets, pollution, etc.)	<ul style="list-style-type: none"> <li>- Policy makers (ministries)</li> <li>- Environment / climate change</li> <li>- Water management</li> <li>- Agriculture</li> </ul>	<ul style="list-style-type: none"> <li>- Water strategy / plans</li> <li>- Spatial strategy / plans</li> <li>- Capacity building (assessments)</li> </ul>	<ul style="list-style-type: none"> <li>- Better matching (future) demand and supply through integrated water and spatial planning and management, considering climate change projections and impacts, especially on vulnerable groups.</li> <li>- This requires studies, incl. at watershed level, sectoral demands, climate change impacts, etc.</li> </ul>	<ul style="list-style-type: none"> <li>- National framework for replicating the watershed / areas-based climate change resilient water-related assessment, planning and management approach, including techniques used</li> </ul>	<p>Component 3</p> <ul style="list-style-type: none"> <li>- Strengthened National capacity to replicate the approach in other areas, to capturing and share lessons and to integrate these in policies and regulations</li> </ul>	<ul style="list-style-type: none"> <li>- Reduced pressure on water resources</li> <li>- Reduce pressure on urban services system / drinking water</li> <li>- Enhanced social cohesion</li> <li>- Provide a perspective for vulnerable groups</li> <li>- Increased productivity and sustainability of livelihoods for most vulnerable</li> <li>- Reduce need to migrate to large urban areas</li> </ul>
	<ul style="list-style-type: none"> <li>- Governorate and urban managers</li> <li>- (Municipalities)</li> <li>- Governors/ mayors</li> <li>- Planners</li> <li>- Water managers</li> <li>- Agriculture / irrigation managers</li> </ul>	<ul style="list-style-type: none"> <li>- Governorate strategies / plans</li> <li>- Urban master plan</li> <li>- Sectoral plans</li> <li>- Planning and decision-making processes and capacity building</li> </ul>		<ul style="list-style-type: none"> <li>- IRMPs, including studies, assessments, spatial strategies and consideration of climate change and fragility issues</li> <li>- Facilitation of a participatory and integrated assessments, panning and decision-making process</li> </ul>	<p>Component 1</p> <ul style="list-style-type: none"> <li>- Strengthened National, governorate and municipal-level Institutional capacity to assess, plan and manage climate change-related and fragility risks and vulnerabilities, especially related to water</li> </ul>	
	<ul style="list-style-type: none"> <li>- Vulnerable groups (communities and associations)</li> <li>- Poor / informal</li> <li>- IDPs</li> <li>- Returnees</li> <li>- Women &amp; youth + elderly, disabled, etc.</li> </ul>	<ul style="list-style-type: none"> <li>- Inclusion of communities and vulnerable groups in assessment, planning and decision-making processes and climate change resilient livelihood skills building and as beneficiaries of concrete interventions</li> </ul>	<ul style="list-style-type: none"> <li>- Efficient, equitable sustainable and climate change resilient water supply systems for developed for urban and agriculture use</li> <li>- Facilitation of a participatory and integrated assessments, panning and decision-making process, including trainings</li> </ul>	<p>Component 1:</p> <ul style="list-style-type: none"> <li>- Strengthened community-level awareness and ownership of processes and interventions</li> </ul> <p>Component 2</p> <ul style="list-style-type: none"> <li>- Increased adaptive capacity within the water sector / natural resources</li> <li>- Diversified and strengthened water-related livelihoods and sources of income</li> </ul>		
<b>Key assumptions</b>	<b>Key assumptions</b>	<b>Key assumptions</b>	<b>Key assumptions</b>	<b>Key assumptions</b>	<b>Key assumptions</b>	<b>Stakeholders</b>
<ul style="list-style-type: none"> <li>- Water demand is increasing due to population growth, urbanization and returnees; pollution is spreading</li> </ul>	<ul style="list-style-type: none"> <li>- Mayors for main decision making</li> <li>- Combined water and spatial planning is required</li> <li>- Most of water is used in agriculture</li> </ul>	<ul style="list-style-type: none"> <li>- Water management (supply, demand, techniques) is not holistic, integrated and up-to-date</li> <li>- Water and climate change are not integrated in spatial strategies and local plans</li> <li>- Majority of DPs, returnees, poor and women work in agriculture that depends on water</li> </ul>	<ul style="list-style-type: none"> <li>- Water interventions are scattered and mainly focus on groundwater use, which is often polluted</li> <li>- Integrated water resource and spatial management strategies are tools to guide development and enhance social cohesion</li> <li>- Studies and assessments will be required</li> </ul>	<ul style="list-style-type: none"> <li>- Concrete effects plans is difficult to measure</li> </ul>	<ul style="list-style-type: none"> <li>- Good practices and lessons on innovative techniques such as water harvesting and treated waste water reuse are scarce in the region</li> <li>- Rainwater harvesting and treated waste water reuse can be cost effective and sustainable techniques, especially when groundwater is not an alternative due to depletion and polluted</li> </ul>	

**Annex 2: overview of examples of innovative climate change related water adaptation techniques + costs, maintenance needs and best practices**

Relevant water resource management adaptation needs (in line with national priorities - INDC)	Relevant adaptation measures Identified / confirmed per municipality (by mayors)	Possible innovative techniques (identified by Dutch water experts)	Cost-effectiveness (total cost / beneficiaries) - consider capacity in M3 per 24 hours for waste water treatment	Sustainability / maintenance arrangement (durability in years technique + cost for maintenance)	Proven technique (project example (preferably in MENA region))
Reduce water losses, reduce water leakage from canals	Separate water for drinking and other uses (network)	Mobile Black Water Treatment Unit: horizontal placed container units for wastewater treatment, mobile and up-scalable system. Is able to collect black, yellow and grey water separately for different ways of treatment and re-use purposes. Mobile Black water treatment unit (BWTU): 8000 users (20ft unit), Connect to sewage or influent input via vacuum trucks, In front of the system we install a drinking water unit (cleans surface water into drinking water, water also used for flushing and washing) 450 m <sup>3</sup> per day (Nijhuis Semilla)	Output BWTU (per day): 1 m <sup>3</sup> waste; 4 m <sup>3</sup> compost (or 367 m <sup>3</sup> methane gas), compost for soil treatment, 385 m <sup>3</sup> desinfected irrigation water (30,000 kg fertilizers)	Options: Digester for methane gas (instead of composting unit), Containerized (or boxframe), Self-sufficient via solar panels; Operation & Maintenance, Monitoring; Sanitation (family units = shower, urinoir and toilet with 3 m <sup>3</sup> storage waste water), Hydroponics system (preferable), Vertical farming	
		Purify surface water and/or harvested rainwater, with hand- or solar (or grid) powered water treatment devices: Villagepump 500. Each Villagepump purifies up to 500 liter water per hour, using an ultrafiltration membrane in combination with a (patented) automatic back-wash system that by cleaning the membrane app every 10 minutes, extends the lifetime of the precious UF membrane up to 1 - 2 years. Villagepump treated water will meet WHO standard regarding removal of bacteria, viruses and turbidity. With an optional Activated Carbon filter, taste and color can be improved (Villagepump)	The Villagepump produces safe clean drinking water at a price per liter between 0.2 and 0.3 €, including all capital and operational expenses. Each Villagepump provides up to 500 liter per hour and has an expected overall production of clean water during lifetime of app 300,000 m <sup>3</sup> .	The expected economic lifetime of each Villagepump is 5 yrs. based on an average production of 2M <sup>3</sup> clean water per day, which could serve a community of 250 people or in case of emergency up to 1.000 people. Preventive maintenance schedules are available – requires approximately 1-2 hr every 4 weeks. Maintenance activities can be done by low-skilled staff who only have to follow a one-day training course.	In the MENA region, we have an installed Villagepump 500 in a refugee camp in Lebanon, run by Solidarites International (and funded by UNICEF). This unit is operational for more than 1 year.
Raising water use efficiency, supporting water harvesting projects and using high efficiency irrigation methods	Drip system / micro irrigation, subsurface, etc.	Drip irrigation, surface and subsurface irrigation Broere Hortitech)	Drip irrigation give a water volume reduce from 75% against overhead irrigation.	Investment/ha.€ 350- €1100,- Year cost: 75%	For more than 10 years al over Europe and other areas
		Climate smart water lifting technique (solar irrigation) for shallow groundwater (IHE Delft)	target is return on investment <3yrs for smallholder farmer in SSA	the technique is still in development and cost and sustainability are being improved	<a href="http://www.fao.org/3/i9047en/i9047EN.pdf">http://www.fao.org/3/i9047en/i9047EN.pdf</a>
		Growboxx/Waterboxx Intelligent bucket that provides water to a tree and vegetables/ bushes/ flowers while creating a healthy micro-climate. Helps the roots of planted trees to reach over 3m depth within the first year(s) after which trees can survive on their own (tap the available groundwater in the soil). Allowing to restore degraded land for agroforestry or eco-system restoration; 90% less use of water 90% less costs in comparison with drip irrigation 90% higher survival rates (Goasis)	Groasis Waterboxx pallet prices (300 units) = 13.99 Euros per unit. 20ft container= 9.99 Euros per unit. 40ft container= 8.99 Euros per unit. Wicks= 0.20 cent per wick. Growboxx pallet price= 5.99 Euros per unit 20ft/40ft containers= 4.49 Euros per unit Prices are ex-works.	Groasis Technology doesn't use groundwater to plant trees. There is no need to drill a well or install a pump and a water pipe network and have electric installation. Groasis doesn't use any energy and you can use saplings. Drip irrigation uses 15 liters of water per day while Groasis Technology 60 liters of water for the rest of the plant's life.	Patented in over 100 countries Proven technology planted more than 200.000 trees in over 40 countries, with up to 12 years of continuous growth in a wide variety of climatological conditions. <a href="https://www.groasis.com/en">https://www.groasis.com/en</a>
	Rainwater harvesting	Typically, 0.50 - 1.50 €/m <sup>3</sup>	Typically, 0.15 - 0.30 €/m <sup>3</sup>		

	Rain or stream water harvesting + storage at farms	DeltaX (modular) water storage); irrigation by subsurface. The space will be used in the underground to store the flooding water during heavy precipitation. DeltaX is space efficient: above-ground surface can be used for e.g. parking, storage, and buildings (up to a certain weight). This makes the system suitable for use in refugee camps under tent dwellings or in urban areas farms or industrial zones where space is limited. The underground storage also prevents the evaporation of the water. If needed, stored water can be used (depending on level of treatment) for irrigation or other purposes. Due to the modular and flexible system DeltaX can be reused, unlike the conventional concrete solutions (Deltae)	Approximately EUR 10,000 / 100 m <sup>3</sup> water treatment. Due the modular design it's possible to realize a storage which has more capacity. The price gives a directive. Generally the system is cheaper than conventional solutions such as concrete basins.	Expected is 50 years. The storage is always under attention by monitoring. Every 15 years (prediction) could be given as maintenance period. DeltaX can be reused in a sustainbale way in case flows or weather conditions change.	The DeltaX system is proven and installed in The Netherlands.
	Other	Sub laterals use PE by irrigation instead of gravitating canals (Broere Hortitech)	An expected reduce in loss of water from minimum of 20%	Less water, healthy crop, les crop protection needed.	For more than 10 years al over Europe
		Mulching to save water and improves the yield (Saline farming group)	20-40% water savings, 30-100% yield increase in total		<a href="https://securingwaterforfood.org/innovators/salt-tolerant-potato-metameta-salffarmtexel">https://securingwaterforfood.org/innovators/salt-tolerant-potato-metameta-salffarmtexel</a>
		Fresh water-saline water irrigation. This results in a 50% fresh water use reduction (Saline farming group)			
		Dairy sector. It is possible to reduce the water use by 50 % (Yuniko)			
Promote the use of non-conventional water resources (treated wastewater); pilot treatment plants for villages, spatial treatment plants for small communities and water production	Mobile wastewater treatment plants (+ irrigation connections)	Decentralised waste water treatment units Bever IIIA unit => this is a vertically placed container unit for decentralised wastewater treatment. They are mobile and up-scalable. Kind of prefab septic tanks (Afmitech)	300 PE (1 PE = 135 liters of average quality of domestic wastewater with 60 mg BOD/l) incl effluent polishing € 75,000 – 40.5 cbm day. Additional local work concrete tank diameter 3,50 meter + buffersumps appr. €30,000. Total € 105,000 - / 300 = € 350/person or € 2625,- per cbm installed capacity.	mobile system, biological treatment, no chemicals added; energy efficient use by installing solar panels or battery pack is possible, sludge reusable for agriculture.	
		Mobile Black Water Treatment Unit (refer above)	Output BWTU (per day): 1 m3 waste; 4 m3 compost (or 367 m3 methangas) , compost for soil treatment, 385 m <sup>3</sup> desinfected irrigation water (30,000 kg fertilizers)	refer Mobile Black Water Treatment Unit above	
		Pre-fab septic tanks connected to a Small Bore Sewerage system followed by treatment in an Anaerobic Baffle Reactor followed by Vertical Flow Constructed wetland (or trickling filter) followed by irrigation (waste)	USD 200 - 400 per household of 10 persons	USD 5 - 10 per household of 10 persons per year. Lifetime > 15 years.	Tamale (Ghana), Zata'ri refugee camp (Jordan) <a href="https://iwaponline.com/washdev/article-abstract/7/3/521/31630/Developing-water-and-sanitation-services-in?redirectedFrom=fulltext">https://iwaponline.com/washdev/article-abstract/7/3/521/31630/Developing-water-and-sanitation-services-in?redirectedFrom=fulltext</a>
	Other	Treatment of waste water made ready for irrigation, with the use of paper filters, aerate systems, reverse osmose and a pre-mixer for irrigation water (Broere Hortitech)	Mobile Solar Irrigation unit, total of grid, steering by a mobile phone.	€ 18,000, - for 18ha. Maintenance: 5%	For more than 8 years in NL and in 2018 also in Lebanon.
Improved agricultural practices	Drought tolerant crops / trees	Salt tolerant crops (Saline farming group)	20-40% water savings, 30-100% yield increase in total		<a href="https://www.saline-farming.com/">https://www.saline-farming.com/</a>

(changing sowing dates, drought tolerant crops, conservation agriculture, extension and rural extension services	Permaculture	See Groasis Technology above	See Groasis Technology above	GT allows simultaneous planting of a productive tree with 4 vegetables which creates immediate income or produces food to eat; tree is a bonus that provides long term income GT allows simultaneous planting of a productive tree with 4 bushes / wildflowers which drastically reduces costs and increases speed of re-establishing forest cover	Desert tulip Company based in Amman have been Groasis Technology Experts and distributor in the MENA Region for more than 7 years
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**Annex 3** Consultation plan and actions needed to comply with AF Environmental and Social Policy and Gender Policy

Environmental and social principles	To do / consultation required to comply to AF ESP and GP	(To be) consulted (see section II.H)
<i>Compliance with the Law</i>	<ul style="list-style-type: none"> <li>- Identify relevant rules, regulations and standards, including procedures to comply to these for proposed interventions</li> <li>- Identify national legal framework and guidelines for conducting EIAs for relevant projects – see format in ToR (done during CN)</li> <li>- During full proposal phase, all laws and standards relevant to proposed activities will be identified and process to comply explained</li> </ul>	Environmental directorate MoLAE; Relevant laws and how to comply have been identified (see section II.E) Done at CN stage
<i>Access and Equity</i>	<ul style="list-style-type: none"> <li>- Detailed stakeholder mapping done</li> <li>- Further assessment is needed to fully identify needs and potential issues related to proposed project actions. This will be done through beneficiaries and vulnerable groups consultations and by providing disaggregated data</li> </ul>	Vulnerable groups (to be completed at full proposal stage)
<i>Marginalized and Vulnerable Groups</i>	<ul style="list-style-type: none"> <li>- Detailed stakeholder mapping done</li> <li>- Further assessment is needed to fully identify needs and potential issues related to proposed project actions. This will be done through beneficiaries and vulnerable groups consultations and by providing disaggregated data</li> </ul>	UNHCR; Vulnerable groups (partly done at CN stage)
<i>Human Rights</i>	<ul style="list-style-type: none"> <li>- Initial screening of core human rights not ratified has been done and include: CAT-OP, CCPR-OP2-DP and CED. Besides that, specific project risks are not clear yet. UN-Habitat is in touch with OHCHR and will discuss potential project and activity human rights risks and how these could be mitigated during the full proposal. Also, vulnerable groups will be consulted about this topic.</li> </ul>	OHCHR; Vulnerable groups (to be done at full proposal stage)
<i>Gender Equity and Women's Empowerment</i>	<ul style="list-style-type: none"> <li>- Detailed stakeholder mapping done</li> <li>- Further assessment is needed to fully identify needs and potential issues related to proposed project actions. This will be done through beneficiaries and vulnerable groups consultations and by providing disaggregated data</li> </ul>	UNICEF; UN Women; Vulnerable groups (partly done at CN stage)
<i>Core Labour Rights</i>	<ul style="list-style-type: none"> <li>- Initial screening of core Labour rights not ratified has been done and ILO consulted about possible risks and how these could be mitigated. Details will be provided in the full proposal</li> </ul>	ILO; Vulnerable groups (done at CN stage)
<i>Indigenous Peoples</i>	<ul style="list-style-type: none"> <li>- No indigenous people identified in target area</li> </ul>	
<i>Involuntary Resettlement</i>	<ul style="list-style-type: none"> <li>- UN-habitat will make sure no involuntary resettlement will take place by including a standard clause in all contracts and agreements of cooperation that resettlement will be avoided (unless beneficiary groups request for it).</li> </ul>	MoLAE consulted land owners; Vulnerable groups
<i>Protection of Natural Habitats</i>	<ul style="list-style-type: none"> <li>- Identify any protected areas in target area (done during CN). Details will be provided in the full proposal (besides those in section II.H)</li> </ul>	IUCN (done at CN stage.)
<i>Conservation of Biological Diversity</i>	<ul style="list-style-type: none"> <li>- Identify potential endangered species in target area (done during CN). Details will be provided in the full proposal (besides those in section II.H)</li> </ul>	IUCN (done at CN stage)
<i>Climate Change</i>	<ul style="list-style-type: none"> <li>- Further assessment s needed to Identify potential emissions from proposed interventions during full proposal. This can only be done if actions are fully detailed</li> </ul>	All proposed interventions are small-scale; energy use (for e.g. waste water systems) will be produced through PV (to be

<i>Pollution Prevention and Resource Efficiency</i>	- Further assessments needed to identify if selected interventions will use large quantity of energy during full proposal. This can only be done if actions are fully detailed	completed at full proposal stage)
<i>Public Health</i>	- More assessment is needed to fully understand health risks of proposed project actions. This can only be done if actions are fully detailed	Vulnerable groups (to be completed at full proposal stage)
<i>Physical and Cultural Heritage</i>	- No major heritage sites have been identified in target areas	UNESCO website; no heritage sites have been identified in target areas
<i>Lands and Soil Conservation</i>	- More assessment is needed to fully map any fragile and valuable lands in target area. This can only be done if actions are fully detailed	IUCN; proposed interventions will support sustainable land/soil use and avoid degradation (to be completed at full proposal stage)

#### **Annex 4: Gender Approach and Baseline**

##### **Purpose**

The purpose of developing a specific gender approach and baseline is to provide an overview of what measures have been taken to ensure that women and men and vulnerable groups will have equal opportunity to build resilience, address their differentiated vulnerabilities and increase their capability to adapt to climate change impacts through project implementation (by providing a baseline with targets). Moreover, it also shows how, in this project, women and youth groups are recognized as “agent of change” in building community resilience.

##### **Project preparation process**

A gender specialist is involved in the project preparation to ensure compliance with the Gender Policy. The project design and approach are ‘gender-responsive’ because, during the project preparation phase, gender equality and women’s empowerment have been considered during initial data collection focused on issues, needs and perceptions, activity prioritization and the identification and verification of specific ‘gender’ related risks and impacts. This has been / will be done through desk research, surveys, focus group discussions and community decision-making processes.

##### **Specific steps and considerations**

###### 1. Determinants for gender-responsive stakeholder consultation

Initial focus group discussions with women took place during the concept note phase and will be completed during the full proposal development phase, especially to identify specific needs regarding proposed interventions. Focus group consultations with youth and DPs and returnees are also planned for the full proposal development phase to further identify and assess specific needs regarding proposed interventions and possible and perceived risks and, where needed, mitigation measures. In short, the following stakeholders have been or will be consulted during the full proposal phase to understand specific gender issues and needs:

Table A3.1: Stakeholders (to be consulted) for gender approach

Type of stakeholder	Specific stakeholder
National government	- MoLAE (to be done during full proposal)
UN agencies	- UN Women (done) - UNICEF (to be done)
Community level	- Women focus groups (to be completed during full proposal) - Youth focus group (to be done during full proposal)

## 2. Initial Gender Assessment

- Data baseline – overview of disaggregated data (beneficiaries) in target areas.

Table A3.2: Data baseline – overview of disaggregated data (beneficiaries) in target areas

Population / beneficiaries (Disaggregated)	
x	x
- To be included during full proposal phase	- To be included during full proposal phase

- Differentiated climate change impacts on men and women and their differentiated capacities do adopt to these, gender division of labour and gender-based power structures.

Labour sector	CC impact	Vulnerability	Capacity to adapt
Food crop farming / agriculture	Droughts / less raining resulting in crop failure	Over-represented in sector and high poverty; Limited access to and ownership of land and credit	Women organization / cooperation; capacity building / skill building

### Context:

Syrian women have seen their economic opportunities improve in recent years, with greater numbers of women entering the workforce. But they still face various degrees of inequality in the social sphere, as well as potential condemnation if they are overly visible and active in the public sphere.<sup>22</sup> The crisis has significantly reduced the number of working-age men. Recent estimates reckon that 22.4 percent of households in Syria are headed by women, up from 4.4 percent in 2009. Other estimates put the number of women-headed households in Syria at one in three in 2015.<sup>23</sup> The new responsibilities of women as breadwinners and economic decision-makers, in addition to their traditional role as caretakers of the family, constitute a heavy burden on women. In some sectors women now make up the overwhelming majority of the workforce, with 90 percent women workers in the agricultural sector in some parts of Syria. At the same time, they provide an opportunity for a more profound and sustainable transformation of the status and roles of women in Syrian society.

- Analysis of legal status of women in the country/region

The Constitution of the Syrian Arab Republic grants equal rights to all its citizens in article 25, regardless of gender, and article 45 states that women are guaranteed 'all the opportunities that enable them to participate fully and effectively in political, social, cultural, and economic life'. Nonetheless, individual laws contain discriminatory provisions, and no legislation specifically prohibits gender-based discrimination. The Syrian Arab Republic ratified the Convention on the Elimination of All forms of Violence against Women in 2003, but has not yet ratified the Optional Protocol. Reservations to the Convention were made to Article 9(2), concerning the mother's right to pass on her nationality to her

<sup>22</sup> UN country team internal document on situation in Syria 2018

<sup>23</sup> <https://www.genderindex.org/country/syrian-arab-republic/>

children; Article 15(4), regarding freedom of movement and choice of domicile; Article 16(1), mandating equal rights and responsibilities during marriage and upon its dissolution with regard to guardianship, kinship, maintenance, and adoption; Article 16(2), regarding the legal effect of the betrothal and marriage of a child; and Article 29(1), regarding arbitration between countries in the event of a dispute.<sup>24</sup>

- Analysis of cultural/religious status of women in the country/region
- to complete during full proposal development phase)
- Opportunities for promoting a 'women' and 'youth' as agents of change

Women organization / cooperation; capacity building in the water sector and agriculture sector

3. Project planning and design (to complete during full proposal development phase)

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<sup>24</sup> <https://www.genderindex.org/country/syrian-arab-republic/>